

Municipal Journal

And Engineer

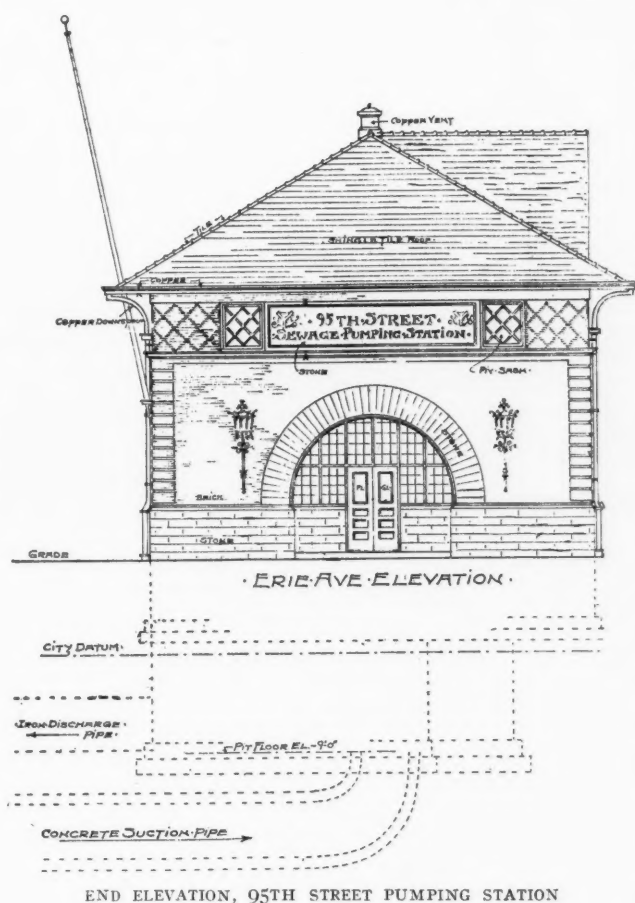
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SEWER CONSTRUCTION IN CHICAGO

Ninety-fifth Street System—First Concrete Sewers in the City—Calculating Dimensions—Thin Walls—Excavation by Steam Shovel—Trenches Dried by Point Wells—Catch Basin Forms—Pumping Station



IN connection with the plans for the collection and removal of sewage in the city of Chicago, one of the most interesting links in the scheme, outside of the Drainage Canal itself, is what is called the Ninety-fifth Street System of Sewers. The points particularly worthy of notice are: First, that this is the first concrete sewer work done in Chicago; second, that the walls are built thinner than is usually the case with monolithic sewer construction, although no steel reinforcement is used; and, third, that the method of construction permitted unusually rapid work.

Previous to the designing of this sewer all underground work of this character in Chicago, including water conduits, had been built of brick, laid in a mortar of sand and Utica natural cement, which is used exclusively in this class of construction. But owing to

the increasing and successful use of concrete sewers in other cities it was determined to use concrete in this system.

Mr. C. D. Hill, the chief engineer in charge of sewer construction, studied the concrete sewers constructed in other cities, and the results obtained, and came to the conclusion that they were usually built much thicker than necessary. In no case in the design of monolithic concrete sewers did he find the walls made thinner than they would be with brick sewers, even where reinforcement was used. He believed, however, that with concrete, which contains no joints as against brick arches which had a laminated construction, only about three-fourths as great thickness would be necessary as in the case of brick walls.

Using Trautwine's formula of $t = \frac{\sqrt{\text{Rad.} + \text{Half Span}}}{4 \text{ feet}}$

+ 0.2 foot, which, for circular section, reduces to $t = 0.35 \sqrt{R} + 0.2$ foot, a curve of thickness of arch for masonry construction was plotted, and this curve indicated almost exactly the practice followed in Chicago, which is the use of two thicknesses of brick up to six feet in diameter and three thicknesses from six to ten feet in diameter. Paralleling the curve for masonry arch a curve was drawn for the proposed thickness of the concrete arch, about three-fourths that of the masonry. It was found that this curve very closely followed the formula $t = 0.28 \sqrt{R} + 0.1$ foot. The thicknesses determined were a minimum of five inches, which held good up to four feet diameter, six inches up to five feet, seven inches up to six feet, eight inches up to eight feet and nine inches up to eleven feet. As a matter of fact, the eight to nine foot sewers were constructed with nine-inch walls. The walls were of course made thicker where abnormal conditions were likely to exist, such as under railroad tracks, etc. So far no trouble has been experienced due to the thinness of the shell, and none is looked for.

Two tentative routes for the system were mapped in 1901 and 1902, and the final and present plans were adopted in 1903. These cover a part of South Chicago lying between Eighty-seventh and One Hundred and Tenth street, north and south, and about five miles east and west. This embraces about 5,500 acres—nearly nine square miles—two-thirds of which was a veritable

swamp grown up with reeds. There were several quite large settlements on the area, including Burnside and South Deering, and many scattered dwellings. In the construction of the sewer house inlets were left every twenty-five feet to provide for the future, and large openings at all corners where laterals will come in.

The pumping station, described later, is located at Ninety-fifth street and Erie avenue. From there two five-foot cast-iron discharge pipes lead to the Calumet River. A 10½-foot inlet sewer runs a block west to Houston avenue where a 7½-foot branch leads to the south and a 9-foot branch goes northwest, paralleling the L. S. & M. S. tracks. These are fed by a system of sewers reaching the various parts of the district and gradually reducing in size, the smallest being 3 feet in diameter. In all there are about fourteen miles of sewers in the system, making this one of the biggest single sewer contracts ever let in the city.

While the plans were completed and approved in 1903, the letting of the contract was not until December 5, 1905, and work was not started until April, 1907, this delay being caused by various legal obstacles. The contract was awarded to the M. P. Byrne Construction Co., of which Mr. Thomas Byrne is president, according to the following schedule:

Pumping station building.....	\$45,000
Pumping station machinery	70,000
2,500 feet of 5 ft. cast-iron discharge pipe at \$25.....	62,500
75 ft. of suction infall sewer, 4 ft. internal diameter, 28 ft. average depth, at \$25 per lin. ft.....	1,875
150 ft. of suction infall sewer, 5 ft. internal diameter, 28 ft. average depth, at \$30 per lin ft.....	4,500

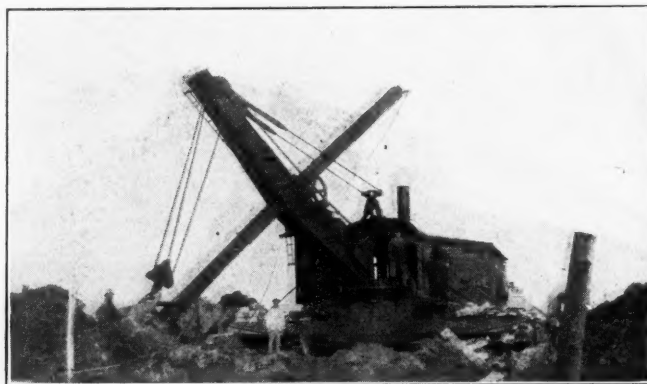
Sewer Mains, Contract Prices

Length Lineal feet	Internal diameter, feet	Average depth, feet	Price bid per lineal foot
500	10½	24.00	\$21.00
3,680	9	22.0	16.10
7,760	8½	17.5	14.75
5,300	8	17.0	14.00
3,420	7½	21.3	14.75
3,340	7	16.5	11.80
1,330	6½	15.0	10.90
3,330	6	18.5	9.75
2,200	6	13.0	8.90
3,990	5½	20.0	9.85
4,880	5½	18.0	9.75
660	5½	17.5	9.00
2,000	5½	13.0	8.60
2,330	5	19.0	8.00
2,660	5	15.5	7.50
2,160	5	11.5	7.00
1,670	4½	16.5	6.60
1,330	4½	14.0	6.00
1,330	4	16.0	6.25
2,000	3½	15.5	5.40
2,660	3½	15.0	5.75
1,995	3½	14.5	5.48
990	3½	14.0	5.50
1,340	3	15.0	5.50
1,330	3	14.0	5.00
1,380	3	12.5	5.38
3,670	3	11.0	5.00

The total amount of the entire bid was \$871,997.50.

Work was started on the system in April, 1907, and has been carried on simultaneously on the three main branches of the sewer, the outfall and the pumping station. At the present date the outfall is completed, the pumping station nearly so, the Ninety-ninth street branch entirely completed, the Ninetieth street branch extended to Cottage Grove avenue and the southern branch pretty well extended on 107th street. Another season will see the completion of the entire system.

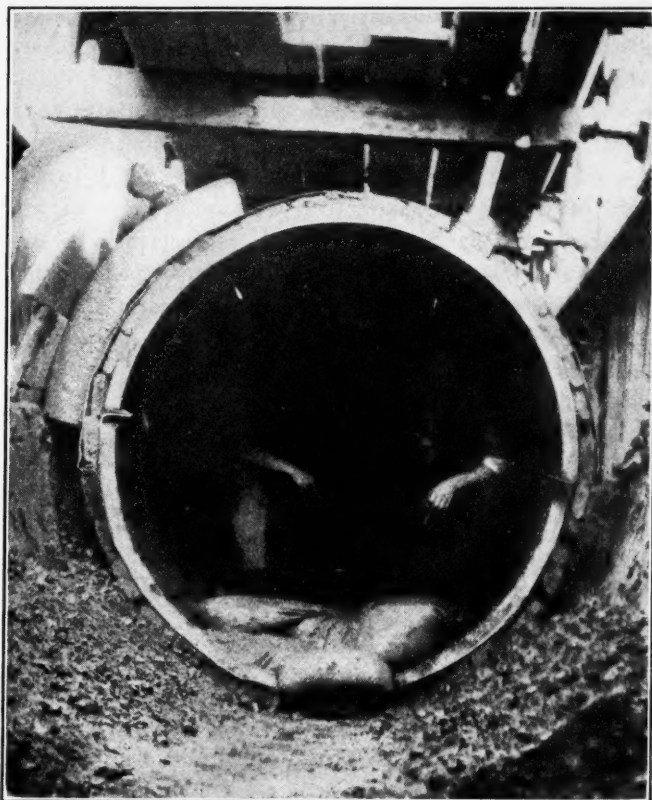
Before work was started borings were made at numerous places, and the general condition found was sand or muck at the surface with clay below. Only a little hard pan was found. In the prosecution of the work these conditions were found to extend throughout the entire district. All the work, with the exception of tunnels under railroad tracks, has been done in open cut, and the crossing of the N. Y. C. & St. L. Ry. tracks in open cut was made possible by stopping traffic on half the tracks and making the cut on that side, then changing the tracks and making the cut on the other side. Traffic was interrupted only three days on each section. The north branch and part of the Ninety-ninth street sewer work has been in practically dry ground, and the illustrations and description of work on the Ninety-ninth street sewer give the methods followed in both. In the swamp on the Ninety-ninth street sewer and on the 107th street sewer a considerable amount of water was encountered and other methods were used.



STEAM SHOVEL DIGGING SEWER TRENCH

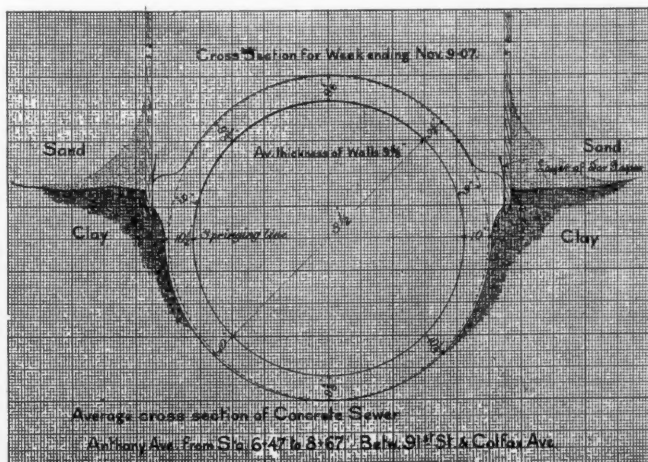
Where the soil was dry the following method of construction was used. A Bucyrus Steam Shovel, carried on skids supported at some little distance each side of the cut, was used for excavating as far as it could reach, the material being placed alongside the trench. The upper part of the trench was excavated somewhat wider than required, while the bottom was shaped as nearly as possible to the size and shape of the completed sewer; light sheathing reaching about to the springing line was inserted to keep the banks from caving under the weight of the shovel. The shovel moved forward by means of a forward anchor and cable passing over a winding drum on the shovel. It was found that, with the use of the shovel, the grade and shape of the bottom could be closely secured but that there was some deviation from a straight line. This, however, caused no trouble. The final shaping and trimming of the bottom was done by hand, any low places being filled with puddled clay. In the construction the same thickness of concrete was used in the entire circle of the arch, with no change of form for the invert or increase of thickness except in some cases at the springing line.

After the bottom of the trench was properly shaped, a wooden form, the width of the board being equal to the thickness of the concrete, was placed eighteen feet from the preceding form, this being the length of the



BOLTED FORMS AND WOODEN LAGGING—CONCRETE INVERT IN PLACE

lagging. Concrete from the mixing machine was wheeled in steel barrows along runways supported on the cross bracing and was dumped directly in place, where laborers with shovels shaped it up. The lagging of the invert was then put in place and rings, four for each eighteen feet and held in place on these by bags of sand, were put in position. Afterward the lagging for the sides was put in place and the space between the lagging and the earth up to the springing line was filled with concrete. The lagging strips were $1\frac{3}{4} \times 5$ inches surfaced lumber. The concrete for this part was dumped into metal chutes which carried it where wanted. The lagging for the arch was then put in place and held by light metal bands. As before, the concrete was dumped on top of the form and shoveled to place and correct thickness by laborers. The accompanying drawing from the engineer's daily report shows how closely this method of construction brings the walls to the desired thickness. The shoul-



AVERAGE CROSS-SECTION OF ACTUAL CONSTRUCTION

ders at the springing line not only fill the trench properly at that point, but act as a further support for the arch. The tar paper at the sides was intended to prevent the concrete from adhering to the sheathing.

The concrete mixing machine rested on skids which in turn were carried on trucks running on rails at either side of the trench. This was moved by cable and winding drum on the shovel. The mixer itself hung below the skids in the trench so that the barrows could be filled from the runway previously mentioned. An electric motor carried in the house above drove the mixer by a belt. Power for driving the motor was delivered by a single wire from a trolley feeder nearly a mile away. The second or return wire was grounded to the water pipe which furnished water for the mixer. As long as possible water from the city mains was used, but when it became impossible to use this water was taken from a pond near the railroad track.

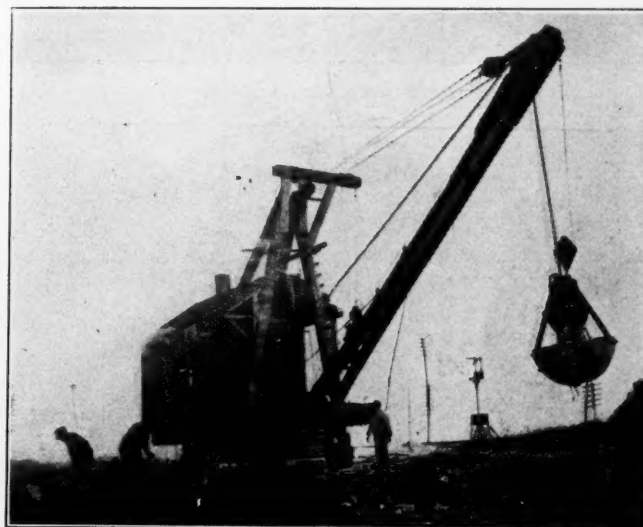


HAULING MATERIAL FROM RAILROAD TO TRENCH

Material was delivered as near as possible on a railroad siding and conveyed from there to the mixer by means of horse-hauled light dump cars. These were hauled directly onto the mixer platform and dumped there, thus decreasing the hand labor required. Universal Portland cement was used throughout the work and was delivered in car lots at the same point.

Openings for the manholes were left in the sewer and after the concrete had thoroughly set the manhole shafts were built in sheet metal forms.

After all this work was completed the sheathing was pulled and the trench filled by means of an orange peel bucket.



ORANGE PEEL BUCKET BACKFILLING SEWER TRENCH

Work on this sewer has progressed very rapidly, the maximum daily amount done so far having been 202 feet of completed five-foot sewer, and the daily average for three months having been over 100 feet of 8-foot and 8½-foot sewer. During the present season about seven miles have been constructed, and 70 per cent. of the total work has already been completed.

On that part of the Ninety-ninth street sewer which is located in swampy land covered with water, it was necessary to build dykes on either side of the trench to keep out the surface water. On this section also it was necessary to use the point system in removing the ground water. Otherwise the work was similar to that in dry ground. One trouble experienced in this section was the honey-combing of the dyke by muskrats. These caused considerable trouble and the holes had to be found outside the dykes and blocked off.

On the southern branch of the sewer a very considerable amount of water was met and it was necessary to use the point system on most of the work. The illustrations show the conditions existing on 107th street on a section three feet in diameter. The work here was carried on in much the same way as on larger sections of the sewer, the method being as follows:

The soil for a depth of ten or twelve feet is of a sandy nature. Below this is a layer of clay. The sand, below a depth of seven feet, is impregnated with water. To remove this the point system of pumping is used. Well points are sunk in the usual way by first making a hole with a hydraulic jet and then slipping in place a point, consisting of galvanized pipe with a copper or brass screen at the end about two feet long. All excavation on this section is done by hand. Down to

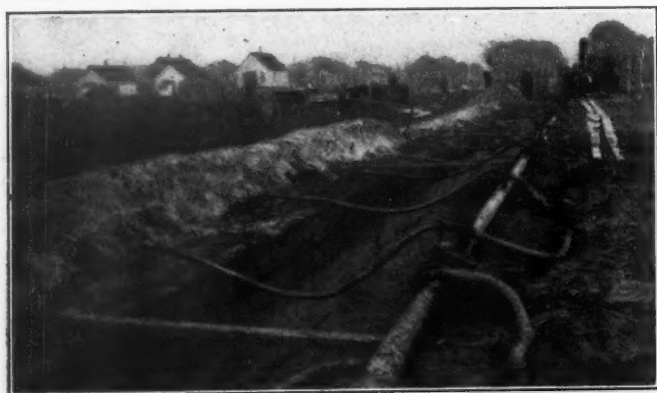
the point where water is reached no sheathing is used. Below that wooden sheathing is driven fairly tight and after the bottom of the trench is reached the cracks between the sheathing boards are filled with straw. A dyke or dam of sand bags is built at the end of a completed section of the sewer and another at the further end of the section under construction. The concrete, quite dry, is placed in the trench as described for dry work and the same methods are followed, except that the excavation is by hand and the mixing of the concrete also is by hand. Here as elsewhere the concrete consists of one part Universal Portland cement, three parts sharp clean sand and six parts of crushed stone.

The catch-basins are 7 feet deep, the upper two feet being drawn in from 4 feet diameter to 2 feet. The walls are 5 inches thick, and the floor 3 inches, resting on a 2-inch plank foundation. A 9-inch trap is placed 3½ feet above the floor and a 9-inch inlet 6 inches higher on the opposite side.

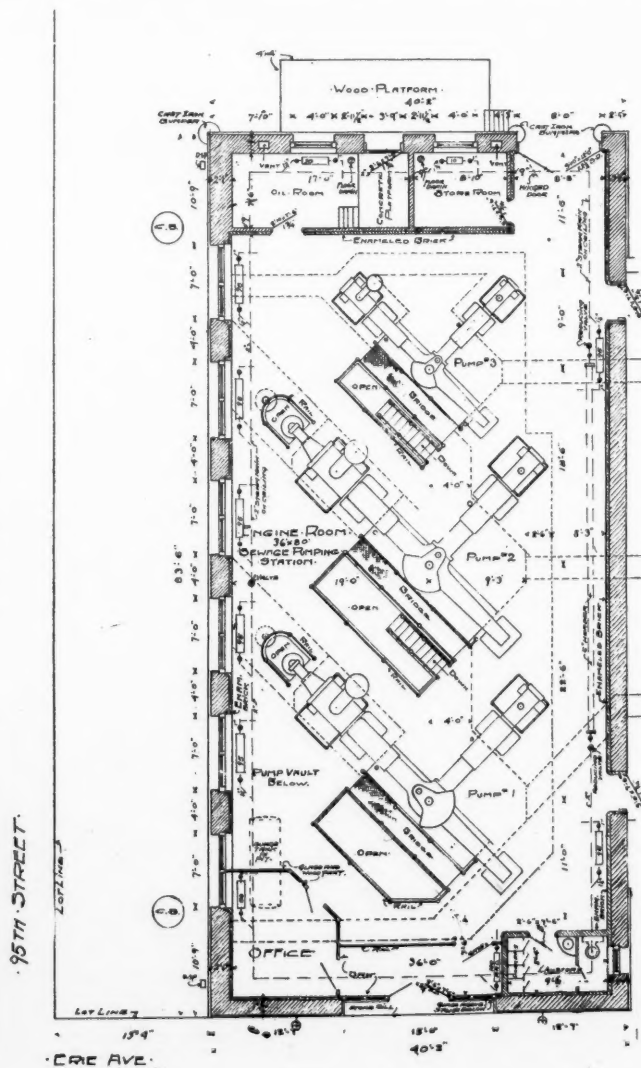
In the construction of these a special collapsible metal form was used which was invented and patented by Mr. W. B. Weldon, an assistant engineer on the work. The form consists of an inside and outside form, the latter being in two sections, one cylindrical and the other tapering. The latter was used on all basins but the former only in unstable ground and water bearing



PUMP HOUSE FOR OPERATING POINT WELLS



POINT WELLS; HOSE CONNECTIONS AND MAIN PIPE



NINETY-FIFTH STREET STATION, MAIN FLOOR PLAN

sand. The tapering reducer was in one piece, with four handles attached. The cylindrical form was in four vertical sections fastened with rivets to angle iron ribs, which ribs lap over each other and are fastened together with bolts when in position; the sections of the form lapping one-half inch. Each of these sections was composed of sheet metal. The inside form was divided into eight vertical sections, each less than two feet in width, the diameter of the basin opening, so as to be removable from the completed basin. Each section consisted of a steel sheet of the proper shape and fastened to angle iron ribs, these ribs lapping and being bolted together as in the case of the outside section. The top was held to the required shape by an iron ring in two pieces which rest upon shoulders on the form sections and are held in position by a two-foot strut inserted between them.

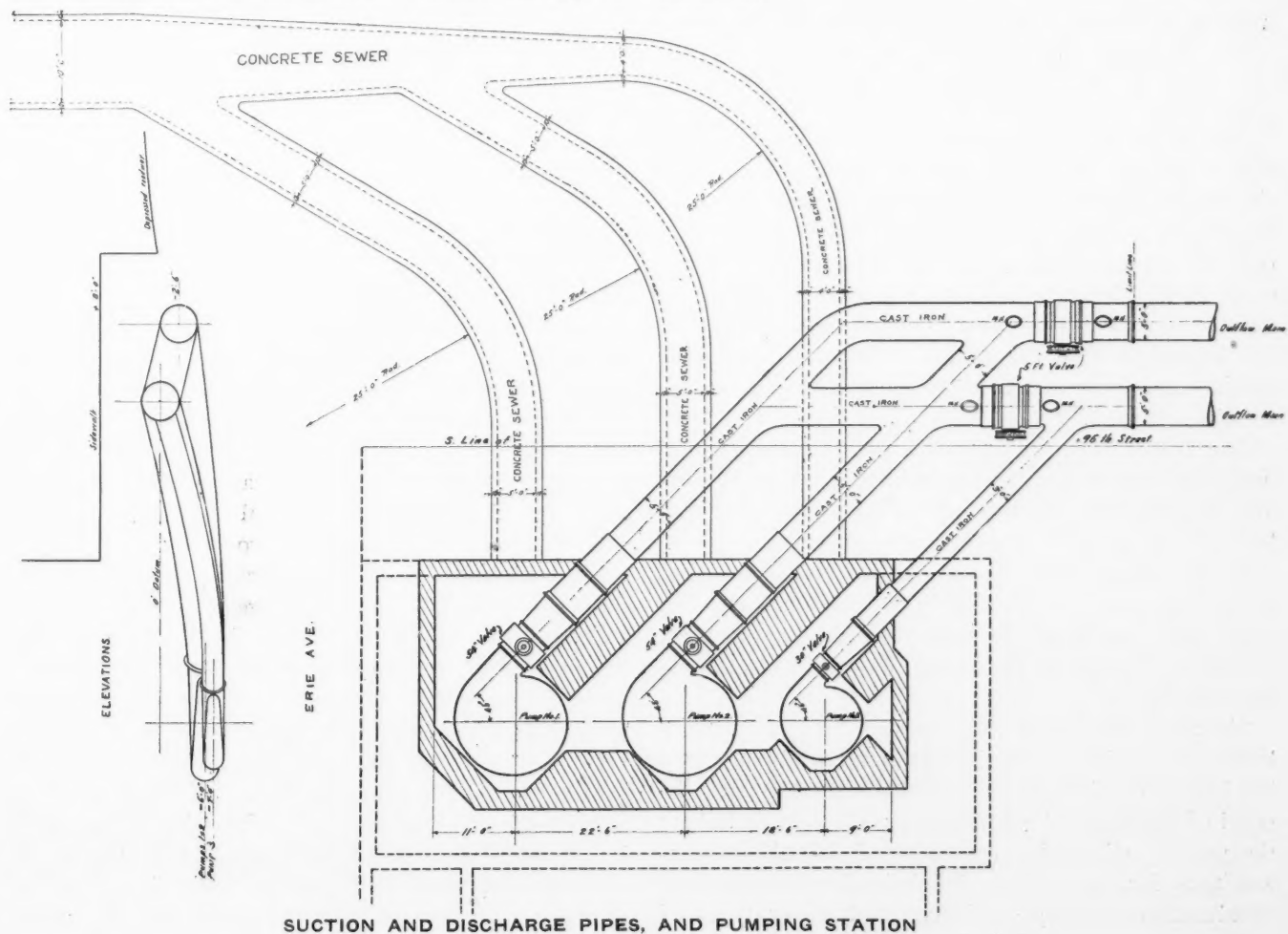
In constructing the basins, after the hole was excavated the two-inch plank foundation was laid. The inside form was assembled on the ground into one part of four sections and one of three sections, which were lowered into the hole and bolted together, and then the eighth or closing section was bolted into place. This form was centered in the hole and blocked three inches from the foundation to permit the construction of the three-inch concrete floor. Concrete was dumped between the side of the hole and this form, shoveled evenly around and tamped; the trap and inlet pipes being set into position as the proper locations for them was reached. When the concrete reached the top of

the cylindrical portion, the outside reducer was placed in position and the concrete filled between the two forms. In removing the inside form it was collapsed by first taking out all the bolts, then tapping the form to loosen it from the concrete. A turnbuckle with a hook at each end attached to opposite sections was used to draw these together and thus detach them from the concrete side. As each section was loosened it was drawn up to the surface. Two men could set up an inside form in ten minutes and remove it in fifteen.

Where the basin was to be built in wet sand, a hole was dug two feet wider than the outside dimensions until water was reached and the outside form was then let down into the opening and sunk into place like a caisson, the sand being excavated from the inside as it lowered. When it had reached the required depth the plank floor was hurriedly laid and the construction completed as above. Removing the lower outside form generally took four men a half hour.

The pumping station, shown in plan and elevation, is built of selected red brick with sandstone trimmings and base. The roof is supported on steel trusses extending entirely across the engine room. The roof is covered with red tile and has projecting eaves. The interior walls of the engine room are finished in white glazed brick. The floor will be finished with oak on concrete.

The steam plant consists of three 150-horsepower water tube boilers built by the Edgemoor Water Tube Boiler Co.



The engine and pumping equipment was furnished and installed by the Allis-Chalmers Co., of Milwaukee. It consists of two centrifugal pumps of a capacity of 110 cu. ft. per sec. under a static head of twelve feet and running at 72 r. p. m., and one centrifugal pump with a capacity of 30 cu. ft. per sec. under a static head of fourteen feet and running 90 r. p. m. This latter is for dry weather flow. Each pump is provided with its own suction and discharge piping and any one can be run separately or they can be all run at one time. The pumps all have submerged inlet and the pump shells are embedded in concrete.

The pumps are of the vertical shaft type direct connected to cross compound horizontal connecting rod type Corliss engines, and each pump and engine is a unit within itself. The steam cylinders of the two larger engines are 16 ins. and 32 ins. by 30 ins. stroke and are rated at 200 horsepower. The smaller has cylinders 9 ins. and 18 ins. by 24 ins. stroke and is rated at 70 horsepower. The engines are provided with jet condensers, reheating steam receivers between the high and low pressure steam cylinders and steam separating receivers over high pressure cylinders. The rest of the equipment of the engine is similar to other engines of the same type.

Mr. Lowe, as Division Engineer, was directly in charge of all the above work.

REFUSE DISPOSAL IN OHIO

Being Studied by State Board of Health—Analyses of Waste Materials and Tests of Garbage Cremators to be Made—Garbage Collection

THE State Board of Health of Ohio, which by the way is one of the most efficient of such Boards in the country, is about to undertake a rather extensive investigation of city wastes disposal and street cleaning methods, so far as these can be learned by a study of methods developed in various Ohio cities. The investigation is expected to cover a period of a year, at the end of which time the Board proposes to publish a special report for the information and instruction of the cities of the State.

The Board has been frequently called upon by local health authorities for advice as to methods of collecting and disposing of city wastes, but has not felt that it has at hand sufficient data to intelligently advise on the subject. In fact, this matter of refuse disposal has never been gone into thoroughly, as it should have been years ago. In a paper discussing this Mr. Paul Hansen, Assistant Engineer of the Board, has made the following statements.

"In the United States, city wastes disposal problems have commanded much thought, and much ingenuity has been evinced in devising methods for the final disposal of garbage and other wastes; but there is lacking the practice of making accurate and scientific studies and tests for ascertaining definitely the advantages or disadvantages of any particular methods or types of apparatus. . . . Methods of studying the disposal

of solid wastes are in striking contrast to methods of studying the disposal of liquid wastes, or sewage. In the latter case the character of the material itself is carefully ascertained by suitable analytical methods and the knowledge thus obtained has proved of the greatest value in enabling engineers to design treatment plants with economy and precision. In the case of solid wastes, on the other hand, the only analytical data we possess in this country were made for a few of the eastern cities. One of the important aims in connection with the contemplated extensive study of this subject is to somewhat relieve this dearth of analytical data by numerous analyses of various waste materials in a number of representative Ohio cities.

"The work so far done has been of a preliminary nature and has only involved visits to the larger cities for the purpose of obtaining descriptions of the methods developed locally, and the sending out of information blanks to all municipalities having over 5,000 inhabitants. Much instructive information and an insight into the practical workings of the various methods of dealing with wastes have been gained by visits to the principal cities, but the returns from the blanks have been rather disappointing. Out of 67 blanks sent out but 24 replies were received. From the great majority of those returned it was evident that methods in use were mere makeshift arrangements and that the information requested was rarely available from properly kept records. During the coming year it is hoped to extend the work so as to include (1) tests on various garbage crematories in use in the State; (2) regular analyses of the various waste materials in a number of Ohio cities; (3) a study of the progress being made in the various cities in dealing with the problems involved, and thus in a way constitute the office of the State Board of Health a clearing house of information in wastes disposal matters."

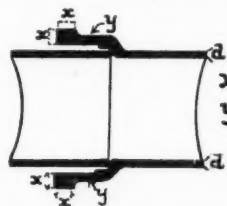
Continuing, Mr. Hansen outlined the general ideas commonly entertained concerning the collection and disposal of garbage, most of which are already familiar to the readers of this journal. In connection with collection of the various household wastes, however, he presents in a brief synopsis the various arguments for and against separation of these into the three classes of garbage, rubbish and ashes. In this synopsis he states: "Leaving out of consideration advantages and disadvantages of methods of final disposal, it may be said that combined collection produces less nuisance while the material is being carted through the streets, due to absorption and covering up of garbage by ashes; also that it simplifies the collection by rendering but one set of men and teams necessary, and furthermore involves less frequent covering of the same ground, all of which would tend toward greater economy. On the other hand, separate collection promotes greater cleanliness and order about individual premises, permits of more frequent collection of garbage which is putrescible, permits of the recovery from the wastes of a greater amount of salable material and useful products, and allows greater latitude in selecting methods of final disposal."

RUBBER WATER PIPE JOINTS

Rubber Rings Used, Without Lead or Other Substance—
Durable if Kept from Air—Cost Compared with Lead Joints

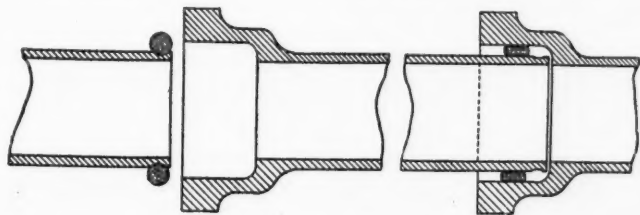
A LARGE number of patented materials have been placed upon the market in recent years for the making of tighter sewer pipe joints, several of which have been used more or less extensively; but for water pipe joints only two materials have been suggested as a substitute for lead, as far as we recall, these being "leadite" and "lead wool," both of which have come into more or less use, largely under special conditions. Of these, lead wool is, we believe, simply lead in a physical condition which permits it being calked without first being melted. Leadite is a mixture of iron filings, sulphur and silica, which melts at a comparatively low temperature and requires no calking.

A method of making joints new to this country was described a few weeks ago before the New England Water Works Association by Robt. Spur Weston, having been found by him in use in Germany. This consists of the use of a rubber ring which is slipped over the spigot end of the pipe, which end is then forced into the bell of the next pipe by means of a long lever, the rubber being thus compressed between the iron surfaces and making a very tight joint. The joint space outside of the rubber ring is then filled with clay, which completes the joint. Both the bell and the spigot ends of the pipe are made different from the American standard when these rubber rings are used, as may be seen in the accompanying illustration, for which we are indebted to the New England Water Works Association Journal.



GERMAN STANDARD PIPE

The peculiarities of this joint are: First, there is neither bead on the end of the spigot nor retention spaces for the lead in the bell. Second, the socket is deeper and there is a shoulder in the bell which serves the purpose of the bead on the American standard pipe. Third, the increase in dimensions of socket vary more uniformly with the increase in diameter of the pipe. Fourth, should the shell of the pipe be thickened, the outside diameter remains constant. The spigot may have a groove 0.2 inch deep to prevent the ring from slipping during the process of jointing, but this groove is sometimes omitted. The thickness of the ring before



METHOD OF USING RUBBER RING

compression should be twice the width of the joint. The inside diameter of the ring should be somewhat less than the outside diameter of the pipe, that it may be held in place by its own elasticity during the process of jointing. They should be of the best pure gum, preferably the variety known as Para gum. They cost from \$2.50 to \$3 a pound at present prices, and are usually made of pure gum rods, butt-jointed and vulcanized. The cross section is circular. Rings of hemp coated with rubber have been tried, but are not to be recommended because of their low elasticity, upon which the tightness of the joint depends.

Assuming lead to cost 5 cents a pound and rubber \$3, and that the pipe is that of the New England Water Works Association standard, but without the retention space, the comparative costs per joint of lead and rubber are estimated by Mr. Weston to be as follows:

Comparative Costs of Lead and Rubber Pipe Joints

(COST OF LAYING NOT INCLUDED)

Diameter of Pipe, Inches	Thick-ness of Joint, Inches	RUBBER RING JOINT				Cost of Ring if all Joint spaces are 0.40 Inch Wide	Cost of Lead, Yarn and Calk-ing
		Thick-ness of Ring Inches	Inside Diameter of Ring, Inches	Weight of Ring, Pounds	Cost of Ring		
4	0.40	0.80	4.50	0.136	\$0.48		\$0.54
6	0.40	0.80	6.50	0.195	0.58		0.86
8	0.40	0.80	8.50	0.247	0.74		0.97
10	0.40	0.80	10.25	0.294	0.88		1.21
12	0.40	0.80	12.25	0.348	1.05		1.48
14	0.40	0.80	14.25	0.401	1.20		1.78
16	0.50	1.00	16.25	1.437	4.31	\$1.53	2.08
18	0.50	1.00	18.00	1.582	4.75	1.69	2.39
20	0.50	1.00	20.00	1.747	5.24	1.83	2.68
24	0.50	1.00	24.00	2.081	6.25	2.22	3.60
30	0.50	1.00	30.00	2.45	7.34	2.66	5.30
36	0.50	1.00	36.00	3.08	9.24	2.96	6.51

It will be noted that up to and including 14-inch pipe the rubber joint is a little cheaper, even without allowing for the cost of bell holes not needed for jointing with rubber rings. There is no reason why the width of joint for pipe 16 inches in diameter and above could not be reduced to 0.45 inch, or even 0.40 inch, when the cost of rubber joints would be less than that of lead joints, as shown by the next to the last column of the table.

The author sums up the advantages and disadvantages of the rubber joint as follows:

One of its chief advantages is that it is extremely flexible. The rubber ring is midway in the bell and therefore at the axis of movement. Therefore no serious unequal compression of the ring can result if the pipe be thrown out of line. The joint is almost perfectly tight and needs no calking; it may, therefore, take the place of flanged pipe for suction mains connecting tube wells. In such cases the position of the branches may be adapted to suit the wells. This is often a great convenience because it is impracticable in all cases to sink wells in exact predetermined positions. Pipe with rubber joints is easier to lay on account of the absence of bell-holes and the simplicity of the jointing tools. There is less breakage of pipe due to

settlement of earth. It resists electrolysis most efficiently. The rubber joint, on the other hand, has not been used for high pressures. How much pressure it will withstand could not be ascertained. It is in use in systems which carry 50 pounds pressure, and probably could be used for pressures considerably higher. The joints appear to be durable. If exposed to air, rubber absorbs oxygen, loses its elasticity, and becomes hard and useless. Compressed in a pipe joint, however, it is preserved. A ring removed after eighteen years of service was apparently as good as new. It would be more durable in contact with ground water than with surface water.

These rubber joints are not being used in general practice in Germany beneath paved streets, but are employed especially for long mains leading from wells or other gathering grounds across hills and valleys, under vacuum and pressure to pumping stations or cities. In this case the superior tightness of a rubber joint outweighs most of the disadvantages.

In discussing the paper, Mr. Allen Hazen stated that he had seen these rubber rings in use in Germany about fifteen years ago, they having been introduced about that time, according to his recollection. They were used on suction mains because they produced a perfectly airtight joint, which could not be maintained with lead joints. Further discussion brought out the opinion that these joints would hardly be practicable where frequent repairs or changes had to be made, on account of the difficulty of making such a joint where pipes were "sprung" into a break in the line. It would seem, however, as though at the few points in a finished line where these changes would be necessary the ordinary lead joint could be used.

Rubber joints have been used in connection with several miles of cast-iron pipe in Norwich, Conn., according to Mr. Chas. E. Chandler, of that city, this line being for the transmission of compressed air. The pipes had no bells, but the joints were all made with sleeves. A rubber ring was placed on the end of each sleeve and outside of that a double clamp which was drawn up by bolts and compressed the rubber against the pipe. These rubber bands were square in cross section. These joints were found to be leaking badly after a few years, which Mr. Weston attributed to their contact with air on both the inside and outside. "Even the best of rubber will absorb about 25 per cent. of its weight of oxygen in a very short time when exposed to air, and when it does so it changes from what might be called a gum to a gum resin, just as linseed oil changes from oil to resin." In the case of a water pipe, the clay on the outside would prevent air reaching the rubber, and on the inside silt from the water would gradually accumulate and protect the joint, a further protection being afforded by the carbonic acid gas which is always present in ground water.

ACETYLENE TOWN PLANTS

Use for Lighting Small Towns Rapidly Increasing—Figures Covering Six Such Plants—Competition with Coal Gas not Serious

BY ALTON D. ADAMS

A NEW industry has sprung up within half a decade, the public supply of acetylene gas from town plants. More than two hundred such plants are now operating in the United States, and their number is increasing probably faster than that of any other sort of gas.

Acetylene plants for public supply seldom come into competition with coal or water gas, but their competition with electric lighting systems is not uncommon, and is likely to increase. What is quite as important to electric interests is that the choice sometimes rests between acetylene gas apparatus and electric equipment for a town lighting plant.

Small towns or villages are usually the sites of plants devoted to the public supply of acetylene gas, but such plants are sometimes constructed in some suburban district of a large town or city. Coal and water gas plants, as is well known, are not nearly as numerous as electric lighting stations in small towns, and hence it is that acetylene apparatus comes much more into competition with electric than with ordinary gas equipments.

Acetylene gas has ten times the illuminating power of good coal or water gas, foot for foot, at the flat-flame burner. Calcium carbide in ton lots, according to the standard published price, costs about seven dollars per thousand feet of acetylene gas made, and this is the only material except water that is required for the production of the gas.

In price to consumers, acetylene gas runs from about \$12.50 to \$20.00 per thousand cubic feet, the most common price being \$15.00 per thousand. Burners regularly used for acetylene gas are rated to consume one-half, three-quarters or one cubic foot per hour, and a good burner using one-half foot per hour gives eighteen candle-power.

As acetylene gives ten times the light of ordinary gas, for the same volume, and its light is of a superior quality, sells for more than ten times as much, can be generated economically in plants of very small capacity, and the first cost of these plants is moderate, experience with coal and water gas is not a certain guide to the financial and technical results that may be expected with acetylene, in competition with electric plants and otherwise. To illustrate these results, an analysis of the cost, operating and financial data of six representative acetylene gas plants devoted to public supply is presented:

Operations of Acetylene Gas Plants During Year of 1907

Year When Erected	Feet of Gas Sold During Year of 1907.	Plant Assets per 1000 Feet Sold.	Investment In Mains per 1000 Feet Sold.	Income per 1000 Feet Sold.	Expense per 1000 Feet Sold.	Expense Carbide per 1000 Feet Sold.	Net Income per 1000 Feet Sold.	Per Cent. Net Income to Plant Assets.
1902	296,800	\$67.90	\$45.02	\$13.77	\$10.89	\$7.38	\$2.88	4.0
1904	184,390	43.78	27.10	15.32	9.74	8.57	5.58	12.7
1905	125,520	60.60	41.99	16.26	13.23	9.41	3.03	5.0
1902	117,680	38.26	24.91	16.37	12.59	8.64	3.78	9.8
1906	98,985	84.35	59.62	15.00	11.07	7.42	3.93	4.6
1904	79,074	85.03	66.87	15.00	11.85	8.82	3.15	3.7

All of these acetylene plants serve small populations, four being in towns of less than two thousand, one in a town of less than three thousand, and one in a town of about five thousand people. There is no other gas supply in either town, but there is an electric light system in the town where 117,680 feet of acetylene gas was sold. Each of these towns covers a large area of farming country, and some of them contain more than one village, while the supply of acetylene gas is mainly confined to a single village in each town, so that no accurate conclusion can be reached as to the relation between the annual sales of acetylene gas and the population actually served.

The two earliest plants began operation in the year ending June 30, 1902, and the latest plant during the corresponding year of 1906, so that all have had time to get well started. All of the figures for plant assets and operating expenses relate to the year ending June 30, 1907.

Figures for annual sales of the acetylene gas look small, being 296,800 feet for the largest and 79,074 feet for the smallest plant, but these amounts correspond to fully 2,968,000 feet and 790,740 feet of good coal gas, in illuminating power.

Plant assets include the cost, less depreciation charges if any, of the real estate, machinery, street mains and service pipes, and the meters used in the manufacture and distribution of the acetylene gas, divided by the number of thousand feet of gas sold during the year named. It will be noted that this item of plant assets varies from \$38.26 to \$85.03 per thousand feet sold, but much the greater part of this variation is due to differences in the investment in mains and service pipes, which runs from \$24.91 to \$66.87 per thousand feet of gas sold, in the several plants. Income per thousand feet of gas sold, that is, the average price received for the gas, ran from \$13.77, at the plant selling 296,800 feet, to \$16.37 at the plant selling 117,680 feet during the year.

The total expense of each plant per thousand feet of gas sold, including distribution, management and taxes, as well as manufacture, was a minimum of \$9.74 for the plant that sold 184,390 feet, and a maximum of \$13.23 for the plant that sold 125,520 feet of gas during the year. Figures for calcium carbide are based on its regular published price of \$70.00 per short ton, and on the pounds of carbide actually used by the several plants. The price of \$70.00 per ton is for delivery at certain points where supplies of carbide are kept, and this price is, in practice, increased at other points by transportation charges, but no such increase is added here. More or less of the gas made is lost by leakage from the pipes, and this loss of course increases the total cost per thousand feet sold. The expense for calcium carbide alone ran from \$7.38 to \$9.41 per thousand feet of gas sold, and this expense was 67 per cent. of the total expense for the plant that sold 98,985 feet of gas, and 88 per cent. of the total for the plant that sold 184,390 feet.

Net income, that is, the excess of income over expenses, per thousand feet of gas sold, was a minimum of \$2.88 for the plant that sold 296,800 feet of gas, and

a maximum of \$5.58 for the plant that sold 184,390 feet. This net income divided by the plant assets, in each case, gives the per cent. of net income to plant assets, which varies from 3.7 to 12.7. If reason be sought why these percentages of net earnings are no larger, it appears to lie in the relatively high cost of calcium carbide, and in the relatively high investments in mains.

According to the figures, the cost of carbide is 50 to 60 per cent. of the rate at which the gas can be sold, and to effect the sales about 70 per cent. of the necessary investment was absorbed by the mains. Whether the expense for carbide is due in part to the fact that the supply is within the control of a single corporation, or merely to its necessary cost of manufacture, there appears to be no prospect of a reduction in price. With ordinary coal or water gas, the cost of the materials of manufacture is usually less than one-fourth of the selling price per thousand feet. On the other hand, very little labor is required in the manufacture of acetylene gas, and much labor for coal gas.

The relatively large investments of the acetylene plants in mains is due to their location in villages and districts where the houses are far apart, or else to disinclination of many residents in such places to use the gas, as indicated by the following table.

Gas Sold in 1907			
FEET OF GAS SOLD BY PLANT.	FEET OF GAS SOLD PER METER.	METERS PER MILE OF MAIN.	FEET OF GAS SOLD PER MILE OF MAIN.
296,800	1,805	7.9	29,049
184,390	2,018	30.4	71,023
125,520	2,185	11.8	38,089
117,680	2,815	16.9	64,269
98,985	2,020	20.1	40,624
79,074	2,102	8.8	23,195

The feet of gas sold per meter run from 1,805 to 2,815 by the several plants, corresponding respectively to 18,050 and 28,150 feet of good coal gas in illuminating power, and these latter figures compare favorably with the volumes of coal gas usually sold annually per meter. In number of meters per mile of main, however, the acetylene plants have only 7.9 to 30.4, while the meters of coal gas plants usually run up to between five and ten times these figures. A few coal gas plants in small places, however, run as low as 30 to 40 meters per mile of main. Of course, transmission mains in high-pressure systems are not here considered. As a result of the small numbers of meters per mile of acetylene mains, the annual sales from these mains are 23,195 to 71,023 feet per mile in the table, including sales to street lamps not metered, while the ordinary sales of coal gas plants are fifty times these figures.

To sum up the position of town lighting by acetylene gas, it appears that such plants usually serve quite small populations with correspondingly small annual sales.

Calcium carbide forms the great item of operating expense, and the cost of mains the great item of plant investment, this relatively large cost of mains resulting from the small number of meters per mile. Owing to the cost of carbide, coal gas will not be much pressed by the competition of acetylene town plants.

Manufacturers of electrical machinery have more to fear from the competition of acetylene apparatus than electrical supply systems have from the competition of acetylene gas in town plants.

PUBLIC COMFORT STATIONS

IN a paper before the Commercial Club of St. Paul, Mr. John K. Allen outlined the general principles which may be laid down as governing the location and construction of Public Comfort Stations. Their location, he states, should be where the public congregates in the largest numbers, and consequently the most congested districts of a city should receive first attention. Market places, public squares, street railway intersections, parks and congested districts all offer good opportunities for locating such stations. They should also be constructed in connection with public buildings, such as city halls, police stations, court houses, fire stations, etc. In every case the entrance should be from the sidewalk and readily located.

As to the form, the kiosk seen in Paris the author considers to be objectionable, as well as any other which is too small to require the constant services of an attendant. While it has seemed to be the general practice in England and this country to place such stations underground, it must be the general opinion of sanitarians that they should, wherever possible, be above ground; in which case care should be taken to make the structures artistic, while if the stations are underground the approaches should be given artistic treatment. There should always be substantial railings of special design protecting the stairways, either of stone, bronze or wrought iron, and there is excellent opportunity in connection with ventilating shafts for the construction of clock towers and ornamental lamp posts.

The entrances for the two sexes should be removed as far from each other as the plan and surroundings will permit. The interior should be so designed as to induce habits of cleanliness and should be well ventilated. The passageways should be straight and wide and the design simple, all parts being within the sight of a single attendant; also all parts of the room should be within the view of the visitor immediately upon entering, and the purpose of each portion of the room should be so self-evident that it will be unnecessary to consult an attendant. There should be a heating plant, and, especially where the stations are above ground, this may be placed beneath the floor, which location permits a better heating system and greater accessibility of pipes. The first New York city stations were without heating apparatus, but this was soon discovered to be a vital defect. There should be an adequate supply of hot water for the laboratories and also for cleaning purposes. Only the highest grade plumbing fixtures should be installed, as their use is constant and severe. It should be impossible for visitors to detach any part of these fixtures, and it is desirable that most of the mechanism be hidden from the user but accessible to the attendant. There should be ample artificial illumination, and the natural should be as good as the location will permit, and there should be no dark corners. Forced ventilation by fan is desirable, but without this it is possible in underground stations to procure good ventilation by carrying outlet shafts up through low ornamental towers or into lamp posts, electric light posts, or some other structure.

DEFENSE OF WATER FILTER PATENT SUITS

THE New York Continental-Jewell Filtration Co. has brought suit against the city of Harrisburg, Pa., for alleged infringement of patents No. 546,738—reissue No. 11,672 and No. 644,137. The patents in suit relate to the method of and the apparatus for using a down-draft outlet pipe, and are generally spoken of as the "negative head" patents. The city of Harrisburg has instructed its Board of Public Works to defend these suits, and the City Solicitor, the Hon. D. S. Seitz, has secured the co-operation of ex-Judge M. W. Jacobs, patent attorney, and Mr. James H. Fuertes, of New York, consulting engineer to the Board of Public Works, Harrisburg.

As the filters at Louisville, Ky., Columbus, O., New Orleans, La., and those of the Hackensack Water Co. at New Milford, N. J., are built in a manner similar to those at Harrisburg, the cities and companies owning the four filter plants resembling the one at Harrisburg have decided to co-operate in making a defense in this suit.

On Nov. 6, 1908, a conference was held at Columbus, O., of representatives of the above mentioned cities and water companies, and there was appointed a joint committee to conduct the affairs of the associated cities and companies in co-operating with Harrisburg in making this defense. This committee consists of Messrs. Geo. W. Fuller, consulting engineer, 170 Broadway, New York City, chairman; Theo. A. Leisen, chief engineer and superintendent, Louisville Water Co., 549 Third street, Louisville, Ky., treasurer, and George W. Rightmire, patent attorney and president of City Council, 44 East Broad street, Columbus, O.

The joint committee has secured the services of Mr. Allen Hazen, consulting engineer, New York City, and Prof. J. W. Langley, patent expert, Ann Arbor, Mich. Ample funds have been placed at the disposal of the joint committee, with the stipulation that the suit shall not be compromised and that if the suit is pressed it shall be prosecuted to a final judgment.

MACADAM AND DUST IN FRANCE AND ENGLAND

MR. LOGAN WALLER PAGE, Director of the Office of Public Roads, U. S. Department of Agriculture, chief delegate of this country to the International Road Congress, reports concerning French macadam roads that they are constructed no better than those in this country, but are maintained much more carefully and thoroughly. The same is true to a less extent in England. The latter country has arrived as near to the solution of dustless roads—the present day problem of all highway engineers—as any nation. Her engineers have given the use of bituminous materials for spraying macadam roads the utmost thought and care. Spraying has so progressed in England that many miles of suburban roads are as free from the disease-breeding dust nuisance as the best kept streets of the principal cities of the world. In fact, automobilists are turning the tables and calling for the exclusion of the horse as being the cause of most of the street dust.

TESTING ASPHALT

Physical and Chemical Tests of this Material in Relation to Its Commercial Value—None of Tests Employed Can Be Properly Called "Standard"

BY HARRY TIPPER

THE commercial value of any material is governed entirely by its fitness to meet the varying conditions of actual use. The accidental discovery by practical men that a given material is of value for certain commercial purposes often leads to its use for such purposes before any intimate knowledge has been obtained of the chemical and physical properties which affect its value for such use. Following its adoption, however, a fuller chemical and engineering knowledge of the material is sought after, and an endeavor is made to more thoroughly adapt it to the different conditions required by the practical work in which it is used.

This has been the case with the use of asphalt for paving. As with other materials, observations made of its use and its action as a paving material led to investigations looking to the ascertaining of reasons for variations and failures. In these the laboratory and the construction department, working together, have analyzed failures and noticed the limitations of the material and sought the reasons for these.

In such investigations it is the engineer's province to ascertain the requirements which must be demanded of a material which is to be used for certain classes of work. It is his duty to specify the requirements which the various materials entering into a pavement must meet in order to insure a proper piece of work. He consequently should understand the conditions under which the material is to be used, the action of the strains and wearing effect to which it will be subjected, and what characteristics of the materials employed are necessary to withstand these various conditions.

To simplify for the contractor and engineer the buying and selecting of satisfactory materials of various kinds, and to enable the producers to furnish under the most economical conditions the desired materials, standards have been adopted for almost every material required for paving and road making, which are generally accepted all over the country by both engineer and producer. There is a notable exception to this, however, in the case of bitumens; since no general understood standard has been adopted which enables the producer to employ methods for supplying a uniform product for general use or the engineer to intelligently call for such. The effect of this absence of a standard is undoubtedly to limit competition, to prevent the development of economical systems of production and to add largely to the expense of promotion.

This absence of standard is due, partly at least, to the history of the use of this material for paving. The first asphalt pavements were made from rock asphalt, which is simply lime or sand rock impregnated with asphaltic bitumen, and which was first used by simply breaking it up and rolling it, but was afterwards heated before applying. Later, rock asphalt was imitated by mixing

lime dust and sand with asphaltic bitumen found deposited in this form, this being the common sheet asphalt found throughout the United States.

In the reduction of crude petroleum, in the earlier years of this industry, an asphalt residuum was produced as a by-product which was frequently very impure, was altogether without uniformity, and was therefore of no particular value for paving purposes. This state of affairs produced in the minds of engineers the impression that all residuums from crude petroleum were of little value as a paving material. But later methods of refining crude petroleum have shown that it is possible to secure asphaltic bitumens of absolute purity and practically uniform quality.

Points of difference occur in the composition of such asphalts, as compared with those refined from natural deposits by the partial elimination of water and other impurities; and for many years it was considered that pavements of value could be laid only with asphalt taken from such deposits and referred to as "natural." The author has failed to find any evidence in the past history of the asphalt pavement sufficient to warrant the consideration that only natural asphalts are of commercial value as a paving material. Examination of pavements laid with asphalt residuums fails to discover any inherent inferior characteristics, and the fact would seem to be that a pure, uniform material of the proper consistency within reasonable limits, and careful methods of construction, are all that is necessary to produce a pavement of value. Under these conditions, specifications limiting the asphaltic bitumen to some particular brand are merely an undue limitation of competition and serve no useful purpose in securing the material best suited for the work.

While much has been added to the chemical knowledge of asphaltic material by recent investigations, no attempt has ever been made to consider this with reference to practical work. In other engineering construction the action of the materials employed under varying practical conditions and the reasons for such action have been investigated; but, unfortunately, in the use of asphalt city engineers and other independent observers who have had direct charge of asphalt paving have not kept accurate records and data concerning the character of the asphalt used, the nature of the flux, the condition and percentage of mix and the amount of repairs necessary and the reasons therefor. Records of city engineers generally are almost completely devoid of any data offering a reasonable basis for the investigation of this material.

Unbiased records do show, however, that no asphaltic bitumen has been used for paving which has not displayed, under different conditions of usage and construction, both creditable successes and very evident failures. Apparently no asphaltic cement, from whatever source, has developed a uniform success. It is therefore evident that no particular brand of asphalt can be taken as a standard, to the characteristics of which all other brands should conform. Nevertheless, it is customary, even up to the present time, to refer to some particular brand of material as the standard to be con-

sidered, or to vary the tests if more than one brand is referred to.

The desirability of generally accepted standard specifications, equally applicable to all asphaltic materials, would seem to be self-evident. The methods, however, at present employed for testing asphalts are so incomplete and require such wide limitations that none of the chemical tests will provide a favorable comparison between two different materials from a practical point of view. It is admitted by the best experts that the various asphaltic cements, each of a nature suitable for paving purposes, will not answer precisely the same tests, the requirements being different for each different material. Under these circumstances, specifications applicable to one particular character of material will, unless they be made very wide in their limitations, of necessity eliminate other materials.

The author proposes, in a series of articles, to consider this question of tests from the point of view of their practical value as a basis for securing a material which shall be perfectly satisfactory for paving purposes. The diversity of the tests now employed will be noted and the limitations which they impose on competition will be considered.

There are only two points as to the requirements for asphaltic cement on which chemists agree; these are its purity and the absence of evaporative oils. Aside from these there is a wide range of difference. Melting point, penetration, ductility, adhesiveness and acid tests, all vary with different asphalt producers and different chemists and there would at present appear to be between them no basis of commonly accepted requirements.

ALGAE IN RESERVOIRS

THE advisability of removing from the sites of new reservoirs all top soil containing vegetable matter for the purpose of preventing the pollution of the water by either the decomposition of this or by the growth of algae caused by its presence, is a matter which has received increasing attention during the past two years. In a report recently submitted by Hering and Fuller on a proposed addition to the water supply of Fort Worth, Tex., this subject is briefly treated.

The proposition upon which they reported was that of obtaining an entirely new supply by constructing a 50-foot dam on a stream called Clear Fork, thus forming a reservoir which would impound about 2,500 million gallons which would collect water from a drainage area of 250 square miles. The site for the dam is of a rocky formation, well adapted to the purpose, and the water-shed area is generally rocky or gravelly and contains a very scattered population. Analysis of the water flowing in the stream shows 370 parts per million of total mineral matter, 14 of these being chlorine. "When water is stored in an open reservoir in the southern climate," says the report, "notwithstanding the favorable character of the ground which would be encountered at this location, it would be likely to develop vegetable growths at times, as some such growths secure their

food supply from dissolved mineral constituents in the purest natural water. While we consider that it would be needless to strip the bottom of the reservoir after it had been well grubbed, other than such incidental stripping as would result from securing material for construction of the dam, it is undoubtedly true that the question of tastes and odors in reservoirs requires consideration from a viewpoint quite different from that which prevailed a few years ago. We believe that the quality of the stored water would be improved as regards occasional tastes and odors if it were subjected to aeration by allowing it to pass through aerating fountains and thus come intimately in contact with the air. This has proved helpful in quite a number of instances, and is being adopted for the large reservoirs now being built in the Catskill Mountains for the new water supply for New York City."

This suggestion from engineers of such high reputation as the above will undoubtedly have an interest for other communities as well as Fort Worth; although in this, as in other cases, it must be borne in mind that varying conditions in different localities will ordinarily call for varying treatment.

MUNICIPAL GAS ENGINE PLANT

Operates Street and Commercial Lighting and Water Works
Plants—Producer Gas Used, Manufactured from Bituminous Coal

PERU, Ind., a city of about 15,000 population, owns and operates not only a municipal water works plant, but also an electric plant for both street illumination and commercial lighting. The water supply is derived from driven wells located at various points within and adjacent to the city, some more than a mile from the pumps. The city has recently outgrown both the pumping and the lighting plants, and advantage was taken of the installing of machinery of greater capacity to combine the power plants for the two services and thus reduce the expense occasioned by the maintenance of two plants, with a double set of employees. The power for the two services is now located in one building.

The new plant consists of a four-cylinder, four-cycle gas engine, using producer gas as fuel, and rated at 300 horse-power at 200 revolutions per minute. Direct connected to the engine is a 200-kw., 2300-volt, 60-cycle, 3-phase alternating current generator, with belted type exciter, manufactured by the Western Electric Company, of Chicago. The generator current is transmitted to the switchboard, through which it is distributed by separate panels to the various services supplied.

The producer gas used is manufactured on the premises. When first started the plant used semi-anthracite coal, and is now using Hocking Valley bituminous coal. Difficulties have been experienced in the past in using bituminous coal for this purpose, principally because of the amount of tar which is distilled with the gases and frequently carried over into the engine. With the form of apparatus recently devised and employed in this plant,

however, the tar is all extracted and saved and becomes thereby a valuable by-product.

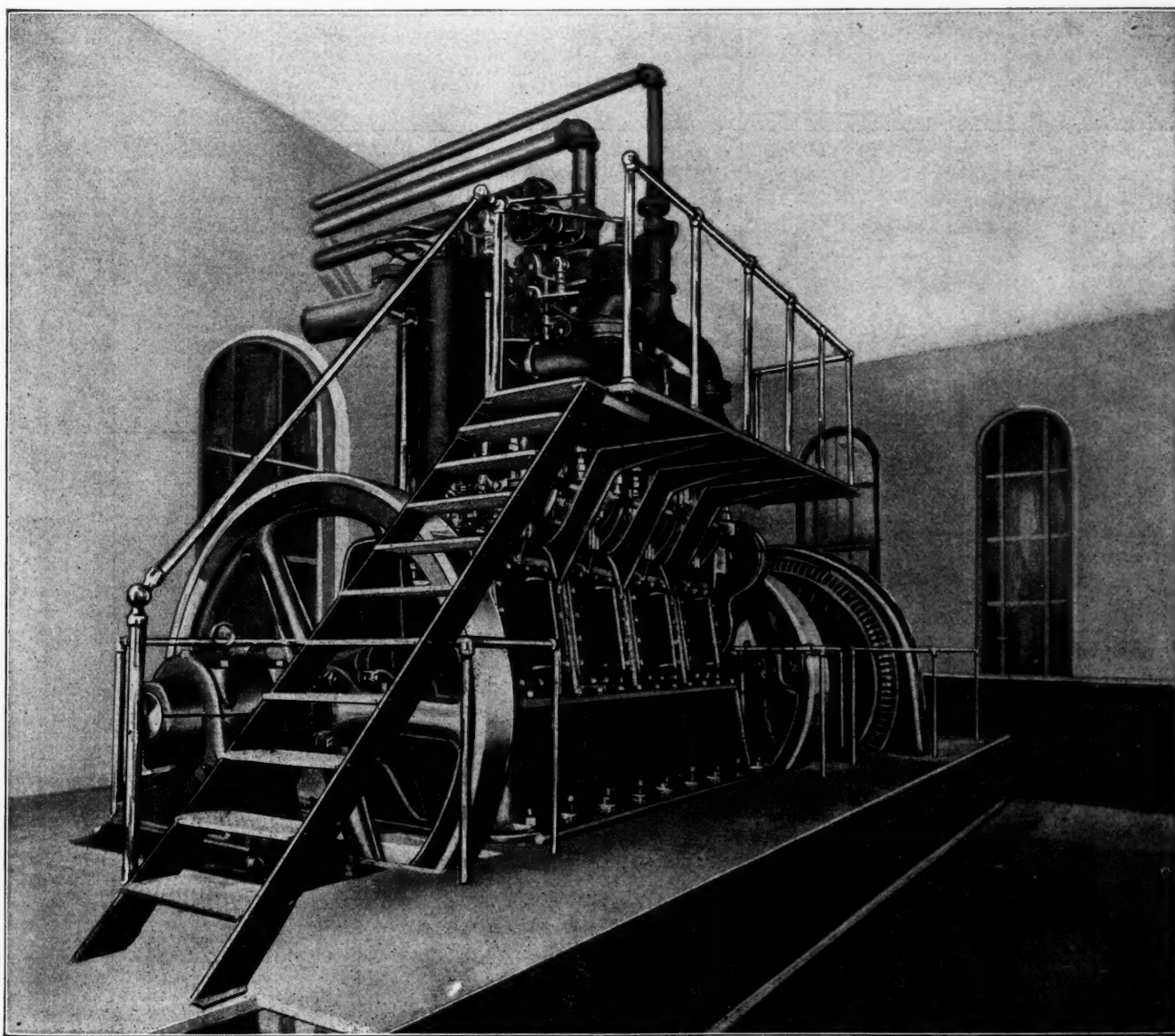
The engine was manufactured by the Model Gas Engine Works, of Peru, Ind., which company guarantees an economy of operation which it is thought will result in a saving to the city of from \$18,000 to \$20,000 per annum, based on the present output of the plant. It is claimed that, when running at full load, this plant will produce 1 horse-power for one hour with a consumption of 1 pound of fuel. This would make the cost of pumping water less than one-fourth of a cent per 1,000 gallons. The gas engine, being four-cylinder, is remarkably steady in its rotation and there is no perceptible variation in the current noted on the switchboard.

The pumps, on account of the location of the wells, are at some distance from the central power station. They consist of two centrifugal pumps driven by induction motors which receive the current from the central station through transformers. Each of these pumps has a capacity of 1,500,000 gallons in 24 hours against a pressure of 60 pounds, and are so connected and arranged that they can be connected in series while run-

ning, thus increasing the pressure to more than 100 pounds in case of fire.

The arc lights for the streets are operated by means of constant current transformers and are distributed between the three phases of the generator. The commercial lighting is supplied in part from the old electric light station, but the new station is now carrying a portion of the commercial lighting load in addition to the other services just mentioned. The one engine is thus furnishing power for three public services—pumping the city water, operating the public street lights and furnishing the citizens with light and power. The plant has been running continuously for some weeks. The first test made was for a continuous run of seven days, 24 hours a day. While the figures for this test have not been furnished us, the test was said to have been very successful and to have verified the claims of economy in fuel consumption which had been made by the manufacturers.

The plant was designed and installed under the direction of Mr. G. P. Wing, superintendent of the city electric plant.



GAS ENGINE AND ALTERNATING CURRENT GENERATOR, PERU, IND.

MUNICIPAL BOND SALES

Data Concerning Sales of Municipal Bonds During October by Cities of Less than 100,000 Population—
Financial Statistics of Cities Listed

NAME OF CITY	Estimated Population	ACTUAL VALUE OF ASSESSABLE PROPERTY (estimated)		Ratio of ass'd to act'l value	Bonded Debt	Sinking Fund	NET BONDED DEBT		Tax Rate Per \$1,000 Ass'd Value	BOND SALES, OCTOBER, 1908				Basis
		Total	Capita				Total	Per Capita		Term of Years	Amount	Interest	Price	
San Bernardino, Cal.	13,000	\$12,000,000	\$923	25%	\$300,000		\$300,000	\$23.00	\$17.00	1-40 ser.	\$110,000	1 1/2% s.a.	100.306	4.476
Fort Morgan, Col.										20	8,000	1 1/2% s.a.	97.00	6.25
Derby, Conn.										20	60,000	1 1/2% s.a.	94.25	4.437
Wilmington, Del.	90,000	55,000,000	611	80%	2,956,850		2,956,850	32.85	15.00	13	25,000	1 1/2% s.a.	100.17	3.983
Sanford, Fla.										3 1/2	15,000	1 1/2% s.a.	Par	
Covington, Ga.										30	60,000	1 1/2% s.a.	101.105	1.929
										50	5,000	1 1/2% s.a.	108.00	4.121
										50	9,000	1 1/2% s.a.	107.00	4.166
										50	9,000	1 1/2% s.a.	106.00	4.211
										50	1,000	1 1/2% s.a.	107.50	4.143
										50	4,000	1 1/2% s.a.	106.50	4.188
										50	100,000	1 1/2% s.a.	106.04	4.209
Savannah, Ga.										50	250,000	1 1/2% s.a.	105.18	4.249
										50	100,000	1 1/2% s.a.	105.01	4.258
										50	16,000	1 1/2% s.a.	105.50	4.234
										50	100,000	1 1/2% s.a.	105.31	4.243
										50	100,000	1 1/2% s.a.	105.06	4.254
										50	50,000	1 1/2% s.a.	105.20	4.248
										50	84,000	1 1/2% s.a.	104.77	4.268
										50	1,000,000	1 1/2% s.a.	105.07	4.254
										50	45,000	1 1/2% s.a.	105.00	4.258
										50	610,000	1 1/2% s.a.	104.92	4.261
Peoria, Ill.										10 1/2 avg.	50,000	1 1/2% s.a.	Par	
South Bend, Ind.										20	20,000	1 1/2% s.a.	103.30	3.763
Hedrick, Ia.										1-20 opt.	1,200	1 1/2% s.a.	Par	
Cumberland, Md.	28,000	14,773,289	527		443,000	\$19,444	423,556	15.00	8.50	14	100,000	5% s.a.	106.227	4.399
Salisbury, Md.										13 1/2-19 op.				
Beverly, Mass.	18,000	29,576,175	643		1,966,250	712,458	1,253,792	69.00	17.40	avg.	30,000	1 1/2% s.a.	100.266	4.47
Framington, Mass.										1-10 ser.	30,000	1 1/2% s.a.	101.689	3.658
Milford, Mass.	12,105	7,116,000	587	80%	123,000		123,000	10.00	22.00	1-20 ser.	40,000	1 1/2% s.a.	103.34	3.614
Quincy, Mass.	30,000	26,920,046	897	100%	1,816,440		1,816,440	60.53	19.70	1-25 ser.	50,000	1 1/2% s.a.	103.63	3.646
										4 1/2-6 ser.	22,200	1 1/2% s.a.	100.80	
Springfield, Mass.	77,500	86,610,281	1,117	100%	2,542,900	435,449	2,107,451	28.48	15.00	4 1/2 avg.	8,400	1 1/2% s.a.	100.80	
Kalamazoo, Mich.	40,000				684,092	105,160	578,932	14.00		1-20 ser.	230,000	1 1/2% s.a.	103.01	3.605
St. Joseph, Mich.											46,600	1 1/2% s.a.	100.50	
Stoughton, Mich.										20	30,000	1 1/2% s.a.	Par	
Bemidji, Minn.											5,000	1 1/2% s.a.	102.04	
Crookston, Minn.	7,500	5,000,000	666	33 1/2%	87,000	16,000	71,000	9.00	5.40	20	50,000	1 1/2% s.a.	101.002	4.921
Eyota, Minn.										10	13,500	1 1/2% s.a.	103.249	4.591
Henderson, Minn.										1-20 ser.	3,000	1 1/2% s.a.	Par	
St. Paul, Minn.										10	5,000	1 1/2% s.a.	103.20	4.597
St. Peter, Minn.	4,500	1,000,000	222	40%	42,000		42,000	9.00	3.20	30	50,000	1 1/2% s.a.	101.633	3.972
Staples, Minn.										9-15 ser.	9,000	1 1/2% s.a.	Par	
Lincoln, Neb.	50,000	60,000,000	1,200	73%	1,224,100	12,990	1,211,110	24.00	7.00	10-14 1/2 op.	10,165	5% a.	Par	
Reno, Nev.	12,000	7,700,000	641	70%	130,000		130,000	10.00	1.80	avg.	16,000	1 1/2% s.a.	102.40	4.203
Bayonne, N. J.										10-20 op.	35,000	1 1/2% s.a.	106.28	5.187
Trenton, N. J.										20	265,000	5% s.a.	109.137	4.313
Allegany, N. Y.	1,400	1,000,000	714	33 1/2%	30,000		30,000	21.00	4.00	10	42,000	1 1/2% s.a.	103.79	4.035
Binghamton, N. Y.	45,000	23,284,660	517	80%	769,500		769,500	17.10	17.90	17 1/2 avg.	20,000	1 1/2% s.a.	Par	
Gates, N. Y.											26,000	5% s.a.	Par	
Herkimer, N. Y.	7,000	4,500,000	643	80%	159,000		159,000	22.71	6.60	1-25 ser.	50,000	1 1/2% s.a.	Par	
Marcellus, N. Y.	800	400,000	500	70%						5-29 ser.	25,000	1 1/2% s.a.	100.116	4.49
Moscow, N. Y.										2 avg.	500	5% s.a.	Par	
North Pelham, N. Y.										5-29 ser.	55,000	4.30% s.a.	100.274	4.277
Norwich, N. Y.										8 1/2 avg.	20,000	1 1/2% s.a.	Par	
										16 avg.	31,825	1 1/2% s.a.		
										8 avg.	13,146	1 1/2% s.a.		
										4 avg.	6,545	5% s.a.		
										3 1/2 avg.	5,323	5% s.a.		
										4 1/2 avg.	3,764	5% s.a.		
										3 1/2 avg.	2,146	5% s.a.		
Port Chester, N. Y.	3,500	3,873,158	1,107		205,800		205,800	58.80	7.78	7 1/2 avg.	12,136	1 1/2% s.a.	101.77	4.46
										5 1/2 avg.	8,165	5% s.a.		
										4 avg.	5,116	5% s.a.		
										3 1/2 avg.	4,130	5% s.a.		
										2 1/2 avg.	1,227	5% s.a.		
										6 1/2 avg.	5,215	5% s.a.		
										2 1/2 avg.	1,970	5% s.a.		
Rensselaer, N. Y.										1-17 ser.	8,500	1 1/2% s.a.	101.941	4.238
Syracuse, N. Y.										1-12 ser.	6,000	1 1/2% s.a.	101.481	4.236
										1-10 ser.	215,000	1 1/2% s.a.	101.851	4.12
Troy, N. Y.	76,000	54,250,172	714	100%	3,541,679	85,779	3,455,900	45.47	17.66	1-5 ser.	25,000	1 1/2% s.a.	100.875	4.187
Wappingers Falls, N. Y.										1-2 ser.	37,000	1 1/2% s.a.	104.036	4.024
Westfield, N. Y.	3,000	1,318,000	439		76,000		76,000	25.00	7.50	5-14 ser.	10,000	1.20% s.a.	100.01	4.198
										1	1,600	1 1/2% s.a.	100.313	4.365
										3 1-6 avg.	5,000	1 1/2% s.a.	100.313	4.365
										30	4,000	1 1/2% s.a.	103.67	4.287
White Plains, N. Y.	14,500				1,397,060		1,397,060	96.35	10.51	30	155,000	1 1/2% s.a.	105.284	4.189
										5	28,000	1 1/2% s.a.	100.375	4.414
										5	66,000	5% s.a.	101.00	4.772
Yonkers, N. Y.	68,000	60,019,750	883		5,018,682	299,600	4,719,082	69.40	24.48	1-20 ser.	125,000	1 1/2% s.a.	103.224	4.119
Fayetteville, N. C.	10,000	3,300,000	330	60%	293,000	2,000	291,000	29.00	10.00	30	100,000	5% s.a.	102.75	5.825
Wilmington, N. C.										40	200,000	1 1/2% s.a.	Par	
Valley City, N. D.	6,500	900,000	138	25%	39,000	12,000	27,000	4.00	7.00	15 avg.	18,000	6% s.a.	103.583	5.645
Wilmot, N. D.										10	1,400	5% s.a.	Par	
										2 1/2 avg.	1,800	5% s.a.		
										2 1/2 avg.	1,700	5% s.a.		
										5 1/2 avg.	5,400	5% s.a.		
Akron, O.	50,000	40,000,000	800	75%	1,280,995		1,280,995	25.62	32.00	2 avg.	3,100	5% s.a.	103.166	3.768
										6-9 ser.	10,680	5% s.a.		
										3 1-6 ser.	16,400	5% s.a.		
										6 1/2 avg.	7,450	5% s.a.		
										3 avg.	11,700	5% s.a.		
Chagrin Falls, O.										6 1/2 avg.	4,000	5% s.a.	104.06	4.234

MUNICIPAL BOND SALES—Continued

NAME OF CITY	Estimated Population	ACTUAL VALUE OF ASSESSABLE PROPERTY (estimated)		Ratio of ass'd to act'l value	Bonded Debt	Sinking Fund	NET BONDED DEBT		Tax Rate Per \$1,000 Ass'd Value	BOND SALES, OCTOBER, 1908				Basis
		Total	Capita				Total	Per Capita		Term of Years	Amount	Interest	Price	
Corlett, O.										6 5-6 avg.	1,744	5% s.a.	103.21	4.449
										6 1/2 avg.	3,788	5% s.a.	104.04	4.302
										10	464	5% s.a.	103.98	4.501
										10	425	5% s.a.	104.00	4.498
										7 avg.	1,700	5% s.a.	104.00	4.331
East Cleveland, O.	7,000	12,000,000	1,714	30%	300,000	15,000	285,000	40.71	29.90	6 avg.	11,480	5% s.a.	104.00	4.237
										19 1/2	15,500	1% s.a.	101.11	3.917
Postoria, O.										2 5-6 avg.	10,000	4 1/2% s.a.	100.425	4.438
										2 5-6 avg.	7,800	4 1/2% s.a.	100.346	4.367
										3 1-6 avg.	11,000	4 1/2% s.a.	100.75	4.24
										9 5-6 avg.	56,000	4 1/2% s.a.	104.017	4.01
Galion, O.	8,500	4,000,000	470	55%	153,000		153,000	18.00	13.20	8 avg.	13,639	4 1/2% s.a.	102.49	4.14
										6 1-6 avg.	21,235	4 1/2% s.a.	102.229	4.10
										1-10 ser.	3,272	4 1/2% s.a.	100.305	4.436
										1-10 ser.	792	4 1/2% s.a.	100.252	4.447
Hamilton, O.	30,000	22,000,000	733	50%	1,064,505	54,684	1,009,821	33.66		25	50,000	4 1/2% s.a.	101.78	3.888
										20	45,000	4 1/2% s.a.	101.58	3.886
										1-10 ser.	8,627	4 1/2% s.a.	102.50	3.99
Lebanon, O.	3,500	4,500,000	1,285	33 1/3%	65,000	2,700	62,300	17.00	10.20	2-3 avg.	1,500	5% a.	107.66	4.464
Logan, O.										5 1/2 avg.	7,000	4 1/2% s.a.	Par	
Madisonville, O.	5,200	1,291,940	247		157,964		157,964	30.00	16.60	24	8,000	4 1/2% s.a.	102.875	3.816
Miamisburg, O.	5,000	4,000,000	800	43%	165,880	7,500	158,380	31.00	30.00	1-10 ser.	8,760	4 1/2% s.a.	100.171	3.965
Painesville, O.										14 avg.	6,500	4 1/2% s.a.	Par	
Pleasant Hill, O.										13 1-6 avg.	16,000	5% s.a.	109.406	1.065
Portsmouth, O.	26,000	16,000,000	615	59%	859,000	54,000	865,000	30.00	34.00	14 avg.	17,000	4 1/2% s.a.	100.761	3.928
St. Bernard, O.	4,500	4,500,000	1,000	64%	200,106	32,870	167,236	37.00	10.12	30	6,000	4 1/2% s.a.	109.783	3.941
Sandusky, O.	23,000	14,000,000	608	50%	640,000	10,000	630,000	27.39	16.92	5	3,000	1 1/2% s.a.	100.20	3.955
Silverton, O.										4 1/2 avg.	500	5% a.	Par	
Wapakoneta, O.	6,200	4,385,286	707	35%	173,280		173,280	27.00	3.60	1-10 ser.	38,000	4 1/2% s.a.	101.783	4.13
										1-5 ser.	750	4 1/2% s.a.	100.70	4.25
Willoughby, O.	2,000	2,000,000	1,000	45%	78,000	2,400	75,600	37.80	2.80	6 1/2 avg.	2,000	4 1/2% s.a.	102.50	4.042
Wooster, O.										20	18,000	1 1/2% s.a.	100.31	3.97
										1-10 ser.	6,400	4 1/2% s.a.	101.582	4.175
										1-2 ser.	1,000	5% s.a.	100.90	4.613
										1 1/2 avg.	1,600	5% s.a.	101.00	4.26
Youngstown, O.	60,483	56,882,000	940	50%	1,269,112	209,167	1,059,945	17.25	29.42	2-6 ser.	19,285	5% s.a.	103.11	4.148
										2-6 ser.	5,835	5% s.a.	103.01	1.175
										2-6 ser.	14,800	5% s.a.	103.31	1.094
										25	15,000	6% s.a.	Par	
Helena, Okla.											15,000	5% s.a.	102.05	
Sapulpa, Okla.	11,750	5,057,000	430	66 2/3%	70,000		70,000	6.00	22.00		30,000	5% s.a.	101.32	4.896
Tulsa, Okla.	14,500	8,875,000	612	80%	195,000	20,000	175,000	12.00	10.00	20	30,000	5% s.a.	101.32	4.896
Ashland, Ore.	4,500	2,400,000	533	67%	93,000		93,000	20.67	23.00	2	2,500	4 1/2% s.a.	Par	
La Grande, Ore.	6,000	3,500,000	583	40%	75,000		75,000	12.00	4.00	10-20 opt.	160,000	5% s.a.	Par	
Dorranceton, Pa.										5 1/2 avg.	10,500	5% s.a.	Par	
										1-5 ser.	7,500	5% s.a.	Par	
E. Washington, Pa.										18 avg.	11,000	4 1/2% s.a.	Par	
Glenfield, Pa.	1,000	750,000	750	60%	30,900		30,900	30.00		22 avg.	30,900	5% s.a.	101.618	4.878
Greensburg, Pa.	15,000	20,000,000	1,333	46%	249,200	12,521	236,679	15.00	9.00	30	50,000	4% s.a.	Par	
Phoenixville, Pa.										17-22 op.-avg.	50,000	4 1/2% s.a.	100.18	3.985
Spartanburg, S. C.										20-40 op.	105,000	4 1/2% s.a.	95.50	4.234
										20-40 op.	81,000	1 1/2% s.a.	93.00	4.372
Lenoir City, Tenn.										30	15,000	6% s.a.	102.00	5.863
Park City, Tenn.	7,500	3,000,000		40%					1.25	30	105,000	5% s.a.	102.00	4.872
Sherman, Tex.	17,000	12,000,000	706	50%	350,000		350,000	10.59	15.00	1-28 ser.	14,000	4 1/2% s.a.	100.539	4.453
										5-32 ser.	14,000	4 1/2% s.a.	100.539	4.453
Stephenville, Tex.										20-40 op.	7,500	5% s.a.	Par	
Cranston, R. I.											50,000	4 1/2% s.a.	Par	
E. Providence, R. I.	15,000	15,000,000	1,000	71%	300,000	20,684	279,315	18.00	14.00	40	65,000	4 1/2% s.a.	98.523	4.075
Burlington, Vt.	22,000	20,000,000	909	75%	910,000	90,962	819,038	37.00	16.00	20	51,000	1 1/2% s.a.	100.69	3.95
Charleston, W. Va.										1-10 op.	300,000	6% a.	Par	
Janesville, Wis.	14,000	12,500,000	892	80%	175,000		175,000	12.00	16.80	2-19 ser.	45,000	1 1/2% s.a.	Par	
Kewaunee, Wis.	2,000	1,004,000	502	83%	32,000		32,000	16.00	20.00		20,000	5% s.a.	105.08	
West Allis, Wis.										3 avg.	4,000	5% s.a.	100.90	4.672

VEHICLE TAXATION AND REGULATION

License Fee in Chicago—Text of Ordinance—Applies to
All Vehicles Except Street Cars—Widths of
Tires Regulated by Ordinance

ILLINOIS State laws so restrict tax rates that most cities must assess special taxes to meet their expenses. This generally is a tax on business of various kinds. In Chicago the latest form of special tax is one known as the wheel tax, which is a license fee levied upon all vehicles other than street cars. It is exclusive of all business tax otherwise levied, and automobiles are required to pay this special fee in addition to the regular State license. The fee varies from \$5.00 a year for a one-horse wagon or vehicle to \$35.00 a year for one drawn by six or more horses. Owners of more than sixty teams are obliged to pay license fee on none beyond that number. A horse with the proper tax tab fastened to its harness may be hitched to anyone's wagon.

The ordinance establishing this license fee went into

effect on the first day of May of this year, but its enforcement has not been seriously undertaken until recently; the principal reason for this being that the authority of the city to collect it has been contested in the courts. Five cases of this kind were taken to the Supreme Court and four have already been decided in favor of the city. Corporation Counsel Brundage has accordingly issued instructions not to await the outcome of the fifth case, but to begin at once enforcing the collections. Opposition to the fee appears to have practically vanished at present and the city collector states that about \$500,000 has already been collected, and the sum realized will total at least \$700,000. The ordinance creating the license fee was passed on February 3, and is as follows:

SECTION 1. That it shall be unlawful for any person, firm or corporation to use, or to cause or permit any of his or its agents or employees to use, any wagon or other vehicle in the transportation of persons or property upon the streets, avenues or alleys of the city, unless such wagon or vehicle be licensed as hereinafter provided; provided, however, that this ordinance shall not be construed as applying to street cars running on metallic rails.

SECTION 2. That any person, firm or corporation desiring a license for any such wagon or vehicle shall file an application with the City Clerk, upon a form provided by him, setting forth the name and address of the applicant, a description of the wagon or vehicle for which the license is desired and the place where such wagon or vehicle is to be kept when not in use; also the number and kinds of other wagons or vehicles kept by said applicant at such place, and such other information as may be prescribed; such application shall be transmitted to the Mayor, and upon the payment by the applicant of the license fee hereinafter provided to the City Collector, the Mayor shall issue or cause to be issued a license which shall be attested by the City Clerk authorizing the use of such wagon or vehicle within the city, until the expiration of such license.

SECTION 3. That the license fees to be paid annually to the City Collector shall be as follows:

One horse wagon or vehicle.....	\$ 5.00
Two horse wagon or vehicle	10.00
Three horse wagon or vehicle	15.00
Four horse wagon or vehicle	25.00
Six or more horse wagon or vehicle.....	35.00
Automobiles with seats for two persons.....	12.00
Automobiles with seats for more than two persons, exclusive of trucks, coaches and busses.....	20.00
Automobile trucks, coaches and busses.....	30.00

All such licenses shall expire on the 30th day of April following the date of issue, and when issued for a period of less than one year, the fee to be paid for the unexpired license period shall be the proportionate part of the annual rate fixed by the ordinance, but no fee shall be less than one-fourth of the annual rate.

All revenues derived from such license fees shall be kept as a separate fund and used only for paying the cost and expenses of street or alley improvement or repair.

SECTION 4. That upon the issuance of said license, the City Clerk shall deliver to the applicant a metal plate bearing a number and the name of the class to which said wagon or vehicle belongs and the year for which said license is issued, and it shall be the duty of such applicant to affix such plate in a conspicuous place upon the right hand side of said wagon, vehicle or horse, where it can be readily seen; and it shall be unlawful for any wagon or vehicle, although duly licensed, to be used upon the streets, avenues or alleys of the city unless such plate is attached thereto.

Provided, however, that it shall not be necessary for owners of automobiles to have the metal plate bearing a number, provided for in this section, attached to their automobile; and, provided further, that it shall not be necessary for any wagon or vehicle to have the aforesaid metal plate attached to it except when actually in use upon the streets, avenues or alleys of the city.

SECTION 5. That any person, firm or corporation violating any of the provisions of this ordinance shall be fined not less than five dollars (\$5.00) nor more than one hundred dollars (\$100.00) for each and every offense, and each day any wagon or vehicle is used upon the streets, avenues or alleys of the city without having procured a license, and without having complied with the provisions of this ordinance, shall be considered a separate and distinct offense.

SECTION 6. That nothing contained in this ordinance shall be construed as in any manner repealing any provision of the Revised Municipal Code of Chicago, as amended and now in force, relating to any particular business now being licensed by the City of Chicago wherein wagons or other vehicles are being used upon the streets, avenues and alleys of the city.

SECTION 7. That this ordinance shall be in force and effect from and after the first day of May, A. D. 1908.

At the same time Council passed another ordinance regulating the widths of tires on vehicles. This makes it unlawful to employ or cause to be employed any vehicle unless equipped with flat or straight-faced tires with oval edges of not less than the following widths:

On four-wheeled wagons or other four-wheeled vehicles the tires on all four wheels shall be as follows:

For any load or burden not exceeding three thousand pounds, not less than one and one-half inches.

For any load or burden exceeding three thousand pounds, but not exceeding four thousand pounds, not less than two inches.

For any load or burden exceeding four thousand pounds, but not exceeding six thousand pounds, not less than two and one-half inches.

For any load or burden exceeding six thousand pounds, but not exceeding eight thousand pounds, not less than three and one-quarter inches.

For any load or burden exceeding eight thousand pounds, but not exceeding ten thousand pounds, not less than three and three-quarter inches.

For any load or burden exceeding ten thousand pounds, but not exceeding fourteen thousand pounds, not less than four and one-quarter inches.

For any load or burden exceeding fourteen thousand pounds, but not exceeding eighteen thousand pounds, not less than six inches.

For any load or burden exceeding eighteen thousand pounds, not less than eight inches.

To measure the width of the tires on any given wagon or other wheeled vehicle, as herein provided, the tires shall be measured from side to side over all.

To determine what width of tires is required on any given wagon or other four-wheeled vehicle, as herein provided, the weight of the wagon or other four-wheeled vehicle shall not be included in the load, weight or burden.

On two-wheeled carts or other two-wheeled vehicles, the width of tires shall be double the width of tires for the same load or burden as herein required for four-wheeled wagons or other four-wheeled vehicles, and in determining the width of the tire the weight of such cart or other two-wheeled vehicle shall not be included in the load, weight or burden.

This does not apply to rubber-tired vehicles or street cars.

It is provided that every wheeled vehicle included under the ordinance must carry in some conspicuous place figures showing the weight of the vehicle, and also the load legally allowable as indicated by the width of its tires. In the case of any question, the person in charge of any vehicle must permit it to be weighed on a public scale on the demand of any police officer. For violating any part of this ordinance the fine is \$100.00 for each offense, each day being considered a separate offense.

WASHINGTON WATER WORKS

GENERAL MARSHALL, Chief of Engineers, U. S. Army, in his latest report concerning the District of Columbia, states that the present water works system of Washington, D. C., cannot safely supply a greater quantity of water than is now being taken from it and recommends metering Federal buildings and institutions to reduce the consumption. During the year the filtered water being supplied to the city has been unsatisfactory with respect to turbidity for a considerable percentage of the time. This, however, is not a new feature and was even anticipated in the report of the experts in 1901. As a result of experiments which have been carried on for some time, it seems certain that the water can be materially improved by preliminary coagulation, and a plant to secure this is recommended. The same experiments demonstrated that preliminary filtration as employed at Philadelphia and a few other cities would not effect the desired results. The efficiency of the filter plant during the year has varied from 99.7 to 98 per cent.; the actual number of bacteria in the filtered water ranging from 4 to 900 per cubic centimeter, and the average being 55.

As stated in these columns some months ago, a dredge was built in the Dalecarlia reservoir for the purpose of removing the enormous amount of sediment which had been deposited there; this being estimated to be between 150,000 and 200,000 cubic yards. Up to the close of the fiscal year this dredge had removed 46,380 cubic yards. It would therefore appear that the dredge can still be employed to advantage for some time to come; in fact, it is expected that deposits will continue to accumulate with sufficient rapidity to make it advisable to retain the dredge in the reservoir permanently.

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Readers are invited to contribute to the MUNICIPAL JOURNAL AND ENGINEER, either in the form of special articles or of letters discussing matters of current interest.

It is also desired that the facilities furnished by the reference library in this office should be widely known and freely used by those interested in municipal affairs. Visitors will be welcomed and provided with conveniences for search, and inquiries by mail will be promptly dealt with.

DECEMBER 2, 1908

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Expert Advice an Economy

A GREAT many city officials consider that the best method of selecting a kind of paving material, a method of sewage purification or any other municipal thing or process is to find out what has given satisfaction in other cities and adopt that for their own. They thus save an expert adviser's fee—but there generally results a waste at the bung-hole from this saving at the spigot. An illustration of the better plan is found in the purification of the water supply of Philadelphia and in Washington, D. C. The supply of the former is given a preliminary treatment by filtration through "scrubbers" or beds of coke and sponge. Experiments at Washington, however, have demonstrated that the water of the Potomac is clarified much more readily

and completely by sedimentation assisted by coagulation. The experiments conducted by experts which resulted in this determination cost a considerable amount, it is true; but immeasurably less than would have the adoption of an ineffective method because it was successful in another city.

Testing Pavement Asphalts

AN article on another page calls attention to alleged serious deficiencies in the present methods of testing asphaltic substances intended for paving. This is the first of a series of articles which we shall publish dealing with this matter of testing asphalts, one of the purposes of which is to bring out discussion on this subject which may lead to a modification of present methods, if this shall seem desirable. The author is interested in the marketing of certain grades of asphalt, and his opinions might naturally be influenced by this fact. But almost all other writers on the subject are influenced by similar considerations. If they find flaws in Mr. Tipper's arguments and deductions we hope that they will point these out, and our columns are open for this purpose. Our desire is to give all a perfectly fair hearing.

As new deposits of asphalts are opened up, more reliable methods of refining asphaltic oils are perfected, and as new uses of asphalt are developed in the construction and maintenance of roads, it is becoming of the greatest importance that City Engineers and other officials in charge of road construction and maintenance be enabled to know what characteristics are desirable in connection with given uses of asphalt and to determine whether they are found in the material furnished.

Refuse Disposal Investigations

SCIENTIFIC study and designing of methods for disposing of city refuse appear to be making rapid strides these days. The thorough work done in connection with the New Brighton, N. Y., refuse destructor is well known to our readers; a special garbage commission has recently reported on Boston's problem, and Milwaukee has decided to adopt the plans prepared for it by Mr. Rudolph Hering—much to its credit, since these plans are the result of thorough and painstaking investigation of the conditions and needs of the city. On another page is given a brief description of investigations which are being carried on by the Ohio State Board of Health and which, if pursued systematically, thoroughly and intelligently, should be productive of much valuable information. As we understand it, the Board hopes to do by most of the cities of Ohio what has been done for New Brighton and Milwaukee, making frequent analyses of the various wastes of which the several cities have to dispose. Moreover, the Board intends to test the various garbage cremators which are in use in that State to determine their efficiency and adaptability to the problems presented in the other cities. We hope that the Board will be backed in this work by the citizens of the State, both financially and by the moral support of all engineers and sanitarians.

NEWS OF THE MUNICIPALITIES

Divers Subjects of General Interest and Their Treatment by City Councils and Officials—Streets, Water Works, Lighting and Sanitary Matters—Police and Fire Items—Government and Finance

ROADS AND PAVEMENTS

Mayor Finds Defective Bricks

Altoona, Pa.—Mayor S. M. Hoyer has made an investigation of complaints of the quality of paving brick used on Sixth avenue, and states that he found many brick soft and crumbling. He says he will refuse to countersign any of the bonds to be given in payment for the work until the defective bricks are replaced or the court orders him to do so. The bricks used are the Bessemer, which were used on Union avenue, where there is more traffic than on Sixth avenue, and they are wearing well. Some time ago the city purchased a rattler for testing paving brick, but has never used it.

Advises Chicago to Build Double-Decked Street

Chicago, Ill.—The Commercial Club has presented its new plan for a connecting link between the North and South Side boulevard systems to the Board of Local Improvements. The plan contemplates a double street, with a double-decked bridge across the river. The lower level is to handle commercial business, with surface connections to side streets. The upper deck is for light traffic purposes. At intersecting streets are to be approaches to the upper level, and in order not to interrupt communication with the adjoining buildings they are to be placed in the middle of the boulevard. Speaking of the need for a general city plan, the report states that Chicago during the past twenty-five years has spent no less than \$222,000,000 for public improvements, over half the present assessed value of the city, and that 40 per cent. of it has been wasted because they were not carried out in reference to a general plan.

Progress of Toledo Boulevard Work

Toledo, O.—The Board of Public Service has issued the following statement of what they accomplished in the way of boulevard construction: "Of a bond issue of \$150,000 authorized, \$95,000 has been issued, and all but \$35,356 spent. Of this \$59,600 nearly 90 per cent. has been used for labor, the statement of the officials showing that during their terms something like 3,750 men have been employed. Nearly 79 acres of property has been secured for boulevard purposes through Right-of-Way Agent Hagar, and it is worth many thousands of dollars. Right-of-way running from 1,000 to 800 feet wide and amounting to 15,755 feet have been secured, 4 miles of improvements have been made, 1½ miles prepared for macadam, 10 miles of drain tile laid, 5 miles of concrete curbing, besides over a mile of storm water sewers."

Wilkes-Barre Moves to Improve Streets

Wilkes-Barre, Pa.—The action in court against the Mayor and Aldermen for maintaining a nuisance in failing to keep streets in repair has apparently inspired Council to action. By a unanimous vote the Street Commissioner has been ordered to furnish a detailed report showing how the street appropriation, which is now exhausted, has been spent. Another resolution orders the Street Commissioner to put the asphalt pavements in repair and instructs the Finance Committee to transfer to the street account sufficient funds for the purpose. An ordinance was passed by Select Council increasing the salaries of assistant street commissioners to \$900,000 each. When this came before Common Council it was returned, the impression, presumably correct, being that the intention was to make the salaries \$900 each. The salary of the Engineer in charge of streets was increased from \$1,200 to \$1,400.

Joliet Seeks Information on Paving

Joliet, Ill.—Mayor John R. Cronin, with the Board of Local Improvements, went to Ottawa and Aurora recently to inspect the material in use upon the thoroughfares of those cities. Considerable paving is to be laid in Joliet during the coming year and the officials are anxious that they may know which shall be the best variety for the city. Those in the party were Engineer H. A. Stevens, Superintendent of Streets Friederichs and D. R. Burke, attorney for the board. Other cities will be visited before the investigation is ended. There has been no little dissatisfaction with the asphalt streets laid in Joliet, and if possible the city officials would like to find an available substitute which does not present the faults. Macadam is not practicable for heavy traffic, and it is almost agreed that some brick process must be used.

To Separate Grades of Two Important Streets

New York, N. Y.—The plan of building a bridge over Forty-second street to carry the traffic of Fifth avenue is again being considered by the Board of Estimate. The plan was originally made by the Municipal Art Commission as a part of a general scheme for improving and beautifying the city. The present grade of Fifth avenue makes the separation of the grades comparatively easy, but Forty-second street would have to be depressed perhaps 10 feet. Two narrow roadways, one on each side of the main bridge, would have to be built to carry the traffic from one street to the other at the intersection.

City Awards Contract Twice

Oklahoma City, Okla.—After having awarded some large contracts for asphalt paving to the low bidders on a 10-year guarantee plan, Council at a later meeting rescinded its action and awarded the contract to the low bidder under a 5-year guarantee to the Conway Company, of Chicago. The Parker Washington Company, who were first awarded the larger part of the work at the first meeting, claims that their contract is binding and have taken the matter to the courts. The difference in the contractors' prices for the 5 and 10-year guarantees amounted to about 5 cents per square yard a year.

SEWERAGE AND SANITATION

Luckless Sewer Job Completed at Last

Chicago, Ill.—The Lawrence avenue intercepting sewer, which has been in the course of construction since May, 1908, has been finished at a cost of \$1,600,000. It has been built to divert the sewage of the north shore, which has hitherto gone into the lake, to the north branch of the Chicago River, thence to the drainage canal. The construction has been a source of annoyance to every one concerned in it and has been the cause of the failure of two contractors. The sewer is 20 feet 6 inches in height and 14 feet in width.

Health Board Arranges for Diphtheria Diagnosis

Indianapolis, Ind.—In the fight on diphtheria and other contagious diseases the Board of Health has arranged to establish in 12 drug stores sub-stations where supplies for making cultures of bacilli from suspected diphtheria cases will be distributed. These supplies will be furnished free to physicians, the returned samples will be collected daily by a messenger from the board and the result of the test will be telephoned to the physician supplying the sample. Dr. Eugene Buehler, secretary of the board, has sent out letters to all physicians in the city urging them to make use of the facilities offered.

Ban on Rummage Sales

Columbus, Ind.—Rummage sales have been placed under the official ban of the Columbus Board of Health. During the recent diphtheria epidemic no effort was made to hold any, but when the diphtheria was practically wiped out the Central Christian Church announced a sale in the basement of the City Hall. Secretary A. M. Kirkpatrick, of the Board of Health, however, ordered it stopped, and issued a public notice, stating that no more rummage sales would be allowed this winter. Rummage sales have become recognized institutions among the churches of Columbus. Poor people depended on these sales almost exclusively and some well-to-do people waited for a rummage sale and then bought a supply of cast-off winter clothing.

Typhoid at Jeffersonville

Jeffersonville, Ind.—Typhoid is fast assuming the proportions of an epidemic in this city, and the number of certain cases cannot be less than 40, with fully that number more under observation of the doctors, but not yet developed far enough for diagnosis. The water from various sources, contaminated on account of the long drought, is under suspicion, and Mayor E. N. Flynn, who is also a physician, is urging that all water shall be boiled. The following warning has been issued:

You'd better boil your water,
And mind what you're about;
For the Typhoid Germ will get you
Ef yer don't watch out.

WATER SUPPLY**Water Cut Off at Bloomington**

Bloomington, Ind.—Lack of water is the all-absorbing topic among Indiana University students. The long continued drought has at last played havoc with the local water works system, the management having given notice of its intention of cutting off the water from the pipes. A little is left in the water works pond and will be held for fire protection.

City Takes Water Plant

Salem, O.—The citizens, at a special election held, decided to issue \$131,000 bonds for the purchase of the Salem water plant. This marks the end of a two-year fight between the water company and Council, which provoked great excitement at times. On one occasion the water supply was shut off by the company for 20 hours.

River Purification Campaign in Indiana

Martinsville, Ind.—Homer L. McGinnis, who was elected to the Legislature on the merits of his agitation for river purification, will prepare a bill which will define stream pollution in a general way. Enforcement will be placed in the hands of the State Board of Health, and the law will not be operative except through the State Board of Health. Pollution will be placed, to a very great extent, on the same basis as all other public nuisances and conditions inimical to public health and welfare. Power will be vested in township trustees, town or municipal boards and county commissioners to institute action by complaint through the State Board of Health, against any source of pollution. In addition, similar power of initiative will rest in a specified number or percentage of people of any community. The State Board of Health will be required to make investigation and to find the facts, having conferred on it all necessary powers to proceed. It will also, as probably the most impartial and scientific authority available, have the discretionary power of declaring whether or not the "nuisance" really constitutes a nuisance and whether it should be abated. Its report will be to the Governor, who, on that recommendation, or indictment, shall proceed through legal channels to bring about the relief or remedy.

Find Water Supply Bad

Michigan City, Ind.—Some months ago the health authorities of Michigan City, alarmed at the increase of typhoid fever in the city, engaged H. E. Barnard, chemist of the State Board of Health, and J. H. Brewster, water chemist in the State laboratory, to make an investigation and report on the cause of the trouble. The pollution of the water which comes from the lake is due to the following causes:

1. The discharge of harbor water into the lake.
2. The shore wash and the stirring up of the bottom of the lake by winds and currents.
3. The dumping of dredged material.
4. Accidental pollution by steamboats, sailing vessels and other shipping.
5. Disturbance of the bottom by mud suckers.

The well water supplies were also examined and more than half were found to be impure. The recommendation is made that all domestic sewage be treated and rendered innocuous before its discharge into the lake.

Metering Water Loses Good Customer

Muncie, Ind.—The Muncie Water Works Company recently placed meters in the court house and jail. After considering the subject of water rates, the Board of Commissioners presented Council with a requisition for an appropriation of \$2,000 to install a water works system of their own. The request was approved and it is believed that the water so supplied will be so much cheaper that the saving will pay for the plant in two years.

To Investigate Water Pressure

Fond du Lac, Wis.—The Common Council has appointed a committee to investigate the water conditions here. Firemen claim that during a big fire recently, when damage to the extent of \$210,000 was done, the Fire Department was unable to get the required water pressure.

Water Company Explains Water Rates

Scranton, Pa.—W. W. Scranton, president of the Scranton Gas and Water Company, has written a letter to the Scranton "Tribune" correcting rumors that the company intended to introduce meters at the expense of the consumers. Mr. Scranton states that the company will purchase the meters itself, and that the meter rates will reduce the cost of water to all consumers who take care and keep their fixtures in repair. The only increase in rates will come when it is necessary to install filters. The introduction of meters always reduces the income of a water company for a few years, he says. He gives the following estimate of the amount of water actually used by families in Scranton in different circumstances:

1. Small-sized house with single faucet and no closet nor sewer connections, 10 gallons per capita. This probably applies to about one-half of the services in the city.
2. Medium-sized house, with hot and cold water, closet and sewer connections, family doing own work, 20 gallons per capita.
3. Fair-sized house, with hot and cold water, bath, closet and laundry tubs, servant doing work, 30 gallons per capita.
4. Large house, with many fixtures, from 30 to 100 gallons per capita, varying with the characteristics of the people living in the house, whether they are careful or careless and indifferent to expense.

Fire Commissioners Discuss Defective Hydrants

Trenton, N. J.—The failure of two hydrants to work, a circumstance which greatly hampered the Fire Department at a recent fire, was discussed at a meeting of the Board of Fire Commissioners. The Fire Board claims that the Water Board is responsible for the care and repair of hydrants and that the Fire Department when it attaches a hose to a hydrant expects to get water.

STREET LIGHTING AND ELECTRIC POWER

Acetylene Street Lights for Town

Bridgehampton, N. Y.—Preparations are under way to lay three miles of gas pipes. Messrs. J. A. Sandford & Son have the contract for lighting the streets with acetylene gas. The lighting district was formed some 12 years ago, and a number of oil lamps installed, but these have been found unsatisfactory for street lighting. The Bridgehampton Board of Trade investigated both electric and gas plants and came to the conclusion that acetylene gas would prove more economical and satisfactory. Messrs. Sandford, who already supply the stores and public buildings of the village from their acetylene gas plant, offered a contract to supply any number of street lights of 32-candlepower each at \$12.50 per year for each light. The Board of Trade accepted this contract, which is to go into operation on January 1. The present cost of the lighting district is \$500 per year, and this will not be increased by the new contract. Forty lights will be installed, to be placed a little less than 400 feet apart over the entire village. An entirely separate line of pipe from that now in use to supply private consumers will be laid for the street lighting system. This will afford better service in both cases and will allow the turning out of all street lights simultaneously at the power house. A device is also being perfected that will automatically light the street lights through the agency of an electric storage battery. The poles and globes now in use upon the streets will be taken by the contractors, who will adapt them for use in the new system.

Will Give Arches to the City if It Will Light Them

Columbus, O.—The merchants of the Hub District are anxious to donate to the city the street arches which they have erected if the city will accept them and agree to keep them lighted. This was virtually the agreement reached when a committee from the Hub District called on Director Fisher, of the Service Board, and Superintendent Gamper, of the municipal light plant, in an effort to get the city to agree to light the arches already erected there. The delegation stated that they had been paying all of the expense in having these arches lighted ever since they had been erected, and thought it was about time the city was doing something. If arrangements cannot be made for the city to furnish current to the district they asked that the City Council be asked to appropriate \$360 annually to pay the cost of operating the arches.

Many Gas Meters Fast

New York, N. Y.—Travis H. Whitney, secretary of the Public Service Commission, reports that during October, 36,882 gas meters were tested. Of this number 6,594 were new meters, 29,739 repaired meters and 549 complaint meters. Of the 549 complaint meters tested 56, or 10 per cent., were absolutely correct; 328, or 60 per cent., were fast, and 165, or 30 per cent., were slow. Of the 328 fast meters tested 212, or 39 per cent. of the total tested, were more than 2 per cent. fast; of the 165 slow meters tested 60, or 11 per cent. of the total tested, were more than 2 per cent. slow and 277, or 50 per cent., were between 2 per cent. fast and 2 per cent. slow.

To Place Wires Underground

Sacramento, Cal.—Trustee Carragher, of the Judiciary Committee, who has for many months had under consideration an ordinance providing that all wires in the business district of the city be placed underground, has the ordinance completed and has given it to Corporation Counsel Platnauer for his opinion before he introduces it in the Board of Trustees. Trolley wires will be the only ones permitted above ground. This will be the means of removing a great number of wires and poles from the business part of the city and will greatly improve appearances.

Atlantic City to Bury Wires

Atlantic City, N. J.—Every wire in the city will be buried in three years as a result of a new agreement between the city and wire owning corporations, carried out in a bill introduced in Council. The Atlantic City Electric Company, which has a monopoly in municipal contracts, will expend \$300,000 in installing conduits.

City Plants Taking Up Bonds

Bellefontaine, O.—The municipally owned public utility plants in this city are paying good returns. The electric light plant is going to be able to pay the interest on its own bonds out of its earnings this year. The interest on the \$50,000, which the new plant cost, amounts to \$2,250, and already the net earnings for the year amount to \$2,300. At the rate the gas plant is earning the \$23,000 outstanding bonds against that plant, most of which bonds are optional, can be wiped out in three or four years. The water works is doing pretty well also. The balance in the treasury is now \$1,000 in excess of last year at this time.

FIRE AND POLICE

For Fire Observatories

Albany, N. Y.—James S. Whipple, State Forest, Fish and Game Commissioner, will probably ask the Legislature for funds to establish observation towers on the higher mountains, that forest fires may be detected more readily before they have a chance to spread. Commissioner Whipple will urge a severe penalty for causing fires through carelessness and will insist that locomotives used in the forests utilize a fuel other than coal. Whether the State should pay the entire cost of fighting the forest fires has not been decided. The towns now pay half the expense.

New Fire Boat for Chicago

Chicago, Ill.—Mayor Fred A. Busse, with Fire Chief Horan and other city officials, recently made an inspection of the new fire boat Joseph Medill. The formal test of its capacity will be made when W. I. Babcock, the engineer who designed it, returns from New York City. The boat will do the work of 12 engines. It has two swivel standpipes, either of which can throw a 4-inch stream for 570 feet on the level, and in addition can supply 18 lines of hose. It is electrically operated throughout and the motors when not running the propellers operate the pumps. It cost \$100,000, and until the arrival of its twin, "Graeme Stewart," will remain downtown, afterward going to South Chicago.

Economy in Police and Fire Departments

Columbus, O.—The members of the Board of Public Safety have put on the safety appliance in the way of expenditures in the Police and Fire Departments, as they have run extremely short of funds. An order has been issued to both the Police and Fire Departments that no orders for supplies would be honored, unless such supplies were absolutely necessary, until the first of the year, when they get their new appropriation.

Heavy Fire Losses in Minnesota

St. Paul, Minn.—According to figures compiled in the office of Insurance Commissioner Hartigan, fire losses in Minnesota in September were 20 times greater than for the same month in 1907, being \$1,700,000, against \$95,000. The enormous increase was due mostly to damage the direct result of forest fires.

Pension for Pittsfield Police

Pittsfield, Mass.—By a vote of four to three the Board of Aldermen has voted to accept the legislative act providing for a pension for police officers. Opposition was made, as the bill carries with it no referendum, as did the bill providing pensions for school teachers or firemen.

Appointment of Police Chief

Des Moines, Ia.—With a view to securing the passage by the Iowa Legislature, at its next session, of amendments to the Police and Fire Commission law, so that Chiefs of Police shall be appointed by Police and Fire Commissions instead of by Mayors of cities, a general meeting of members of all Police and Fire Commissions in Iowa is soon to be held. Correspondence looking to such a meeting is now passing between the cities where Police and Fire Commissions exist, and it is expected that the proposed meeting will be held in Des Moines. Chairman L. Zurmuehlen, of the Council Bluffs Police and Fire Commission, who is a supporter of the movement, says that the present system, whereby the Chief of Police is appointed by the Mayor, makes him, to a great extent, independent of the Police and Fire Commission, and friction at times results from the conflict of authority, which is detrimental to good administration of the Police Department. It is contended that the Police Department should be placed on precisely the same basis as the Fire Department, and that both should be directly under the control and direction of the Board of Police and Fire Commissioners.

Teams Must Make Way for Fire Engines

Miami, Fla.—Chief of Police Hardee has called the attention of drivers of carriages and teams on the city streets to the necessity for their pulling out of the way whenever there is an alarm of fire. It is a singular thing that immediately an alarm of fire is sounded, many drivers crowd to a good position to see the horses and apparatus go by. According to their ideas, that good position is about in the middle of the street. Hence, when the Department is intent on getting to a fire without delay, it finds its path crowded with all sorts of vehicles, the drivers of which are out to see the fun.

Change in Management of High Pressure System

New York, N. Y.—The method of handling the high pressure system that has been in use in Brooklyn will hereafter be adopted in Manhattan also. Hitherto it has been customary for the commanding officer at a fire to telephone to the pumping station when he wants pressure and how much. In Brooklyn as soon as an alarm is sounded from within the high pressure zone the pressure is at once put up to 75 pounds without any special order. If more pressure is wanted it is called for. The adoption of this plan in Manhattan will do away with delays hitherto experienced.

Firemen Study New Service

New York, N. Y.—As the result of a conference at the office of the Commissioner of Water Supply John H. O'Brien, at which Fire Commissioner Hayes, as well as chief officials of the Fire and Water Departments, attended, a new school for the instruction of the city's firemen in the use of the new fire pressure hydrants has been established. The school will hold sessions every Saturday afternoon. About a dozen firemen will attend each session and receive instructions regarding the construction and operation of the hydrant. The sessions will be continued until all the men likely to use the hydrants have received instructions.

Mounted Police for Trenton

Trenton, N. J.—Declaring the citizens of the outlying districts are without proper police protection, Frank Hutchins, President of the Board of Police Commissioners, will soon ask for mounted police. His plan is to use the present patrol wagon and ambulance horses for the mounted policemen. The animals are now seldom required, as their work is done by the new auto patrol. Chief Hiner and Captains Cleary and Dettmar favor the plan. The Commissioners will take up the problem at once.

Electric Machines to Light Firemen's Smokes

South Bend, Ind.—Matches are a dead issue with the members of Central Fire Station, so far as lighting cigars and pipes are concerned. Instead of wearing the seats of their trousers out by scratching matches, the firemen have installed an electric apparatus with which they light cigars, pipes and other "smokes." The machine has been temporarily installed, and if it proves satisfactory, it will probably be purchased by the fire fighters.

GOVERNMENT AND FINANCE

Atchison Wants Commission

Atchison, Kan.—Twenty-five business men of this city met recently and discussed the merits of the commission form of city government. The commission plan has found favor here and after a few days petitions advocating this form of government will be circulated. In the last two years the government of Atchison city has been lax, causing great dissatisfaction.

Censure for Boston Officials

Boston, Mass.—"A lamentable picture of dishonesty and greed is disclosed," reports the Finance Commission in a report submitted to the Mayor of its investigation of the purchasing of coal by the city, the contracts for flagging, the stone crusher contracts and the purchase of Fourth of July prizes. The report further alleges that "absolute disregard of the city's interests was shown by a mayor, members of the Board of Aldermen, the Common Council, a former State Senator and a member of the House of Representatives." The complaint is especially against the absence of competitive bids for contracts covering purchases over \$2,000, as prescribed by law. During the year 1907 the Commission finds that but 52 per cent. of such bids were advertised. The Commission recommends more general observance of the statute; an amendment making the limit above which contracts must be advertised at \$1,000; more general solicitation of competitive bids in cases under \$1,000, and an amendment providing a penalty for violation of the statute "sufficient to cause a strict observance of the law on the part of members of the City Council."

Mayor Wants Rent for Window Space

Fort Worth, Tex.—Assistant City Attorney W. H. Slay is at work on the Mayor's problem of charging rent for window space when merchants avail themselves of the eighteen-inch projection over sidewalks which is allowed by a city ordinance. The City Commission will consider the matter at an early date.

Charges Result in Praise

Hyde Park, Mass.—After an investigation held before the advisory board of forty citizens it became apparent that the charges of graft in connection with certain Hyde Park contracts were not only untrue but that the contractors really saved the town money. The principal charge was that the men laying a sewer in Osceola street had sold back to the town the gravel which they excavated and had received \$1.25 a load for it. It was discovered that the \$1.25 was a charge for teaming only and that as a result of this contract seventy-five cents per load was saved.

To Keep Record of City Property

Paterson, N. J.—Mayor Andrew F. McBride has called the attention of the Board of Finance to the fact that there is no record of real estate owned by the city and no complete inventory, nor is there a custodian of the deeds. He recommends that the Board confer with the Law Department and make suitable arrangements. At the meeting when the communication was read the question of the care of city maps was taken up and it was recalled that at the fire several years ago most of the maps were destroyed and that it cost a great deal to replace them. A vault will probably be placed at the Engineer's disposal.

New Charter to Be of Few Words

New York, N. Y.—The revised charter of New York, to be presented to the Legislature next winter will be one of the briefest charters ever prepared for any city. Instead of being a bulky document like the present charter which covers over 400 pages, the new charter will be a small pamphlet. The Board of Estimates is to be made an elective body. To supplement the charter, an administrative code will be prepared, all of which, according to the charter, will have to be approved by the Board of Estimates, which will have authority to amend the code at any time. The Board of Aldermen will be reduced in membership and will have no power over appropriations, its powers being purely legislative matters of permits, licenses and the like.

Must Give Notice of Accident

Indianapolis, Ind.—In his annual report Frederick E. Matson, Corporation Counsel, charges that there are attorneys who are willing to assist in prosecuting fraudulent claims against the city for the hope of gain, the charges being made in connection with an explanation of the good effect of the law passed by the last Legislature requiring that persons expecting to make claims for damages against the city shall file, within sixty days, a report stating the nature of the accident, where and how it occurred. Formerly many cases were delayed, so that the city could not gather facts for defense. During 1907 there were eighty-three new suits filed, which, with the fifty-six that were pending, made the total 139. Of the latter number, 86 were terminated, among which 33 damage suits were finally disposed of by compromise or successful defense in the trials. The cost of disposing of the 33 suits was \$2,434, or an average of \$73, which is said to be low. Only one judgment for damages was obtained against the city during the year, and this was appealed.

To Increase Municipal Insurance Fund

La Crosse, Wis.—Mayor Anderson has asked Council to increase the insurance fund by adding the interest of the fund to the principal. The fund now amounts to \$25,000, and there is \$1,000 of accrued interest, which it has hitherto been customary to transfer to the general fund. The city still carries \$96,000 in insurance in regular companies on various city buildings.

Newport Charter Makes Many Candidates for Office

Newport, R. I.—Under the new charter which provides for a government of a Mayor, five Aldermen and 195 members of the Representative Council, Newport is to have a lively election. There are altogether 149 candidates for city offices; three candidates for Mayor, sixteen for Alderman and 125 for the Representative Council. Each Alderman must come from a certain ward, but must be elected at large, hence the number of candidates. Each of the five wards has the privilege of electing thirteen members to the Representative Council each year. It is said that after the election the Representative Council is likely to reduce the salaries of the Aldermen from the amount now allowed, \$900 a year.

New System of Bookkeeping

Washington, D. C.—The adoption of a centralized system of control of the finances of the District, with a thorough analytical system of bookkeeping, in order that the business of the local government may be transacted without financial loss, and that the results may be known at all times, has been recommended by Commissioner West and approved by Commissioner Macfarland. By centralizing the bookkeeping now being done in certain branches of the government, under the supervision of the Auditor, it will mean that one clerk who has been keeping the books of the Engineer Department, and two clerks who have been keeping the books of the Property Clerk's office, will be transferred to the Auditor's office. The new system will simplify the methods of making requisitions, accounting and bookkeeping, and what is regarded by Commissioner West as most important, will mean the saving of much time. It is expected the change will become effective by January 1.

City Officers Wish Second Term

Indianapolis, Ind.—Fifty-six Indiana Mayors have attached their names to a petition to be presented to the next Indiana Legislature asking that the law providing that Mayors, Councilmen and city officers be prohibited from serving more than one term be abolished or amended so that officers having served one term will be eligible for another.

Forty Members for Pittsburg Council

Pittsburg, Pa.—The ordinance designating the number of Common Councilmen in each ward of the city, under the new system of wards, has been approved by the Finance Committee of Councils. It will make the number of Common Councilmen 40 for the entire city if the new ward plan becomes effective.

REFUSE COLLECTION AND DISPOSAL

Street Cleaners to Wear Lamps on Hats

Chicago, Ill.—The "white wings" who keep clean the downtown section of the South Park boulevard system at night are likely soon to become known as "fireflies," for each of the men so employed has been provided with a small electric lamp, to be worn on his helmet and connected with a storage battery in his pocket. The lamp is not to enable him to see to do his work, but to enable automobile drivers to see him. Swift moving motor cars have become so numerous as to endanger the lives and limbs of the street cleaners.

Geneva May Collect Garbage

Geneva, N. Y.—The Board of Health has decided that the work of collecting the city's garbage is not properly a duty of the Board. While the Board desires a system of garbage collection and has been collecting information which will be of value in selecting plans for doing the work, the actual supervision of the matter, it is believed, would more appropriately come under the duties of the Board of Public Works or some other city department. The financial prospect the coming year looks a little brighter than in some past years, and three or four thousand dollars may be found to make the experiment next year.

Separate Receptacles for Garbage and Ashes

Lockport, N. Y.—A resolution has been presented to Council by the Board of Health, to the effect that the citizens be requested to deposit their garbage in one can and their ashes in another, and an advertisement has been ordered placed in the city papers making this request of the people. The resolution of the Health Board also asked that the garbage collector be not required to gather paper from the houses.

Good Work of Macon Health Department

Macon, Ga.—The city owns fourteen wagons, or carts, in which rubbish is collected and carted away to the dumping grounds or to the crematory's funeral pyre, and as there are about seven thousand homes in the city each cart has to make over 570 calls per week in order to take away the trash that collects. Chief Sanitary Inspector R. V. Nottingham has just concluded a census of the city and has the names of all persons who desire the trash wagons to stop at their homes. Copies have been furnished to all of the drivers, and in this way the work has been systematized and made easier.

Rubbish in Dangerous Places

Taunton, Mass.—Drastic rules will probably be adopted by the Board of Health, which is having trouble with people who persist in over-riding the notices placed at the various dumping places warning the public against depositing rubbish. There have been some instances where the sign posts have been even trampled down, so strong has been the disregard for the rules as laid down by the Board. There has also been a disposition to dump inflammable stuff in such a way that not only is it dangerous, but it is a nuisance to the people in the neighborhood. Many fires have started from rubbish, costing the Fire Department considerable expenditure of time and money.

Would Abolish Ash Containers

Detroit, Mich.—Fred M. Aldrich, Superintendent of Street Cleaning, and Dr. J. E. G. Waddington, of the West Warren Avenue Residents' Association, have had a lively argument over the ash ordinance, and the association has voted to petition the Council for an amendment permitting ashes to be dumped in the alleys without containers.

Parking and Clean Sidewalks

Washington, D. C.—According to District Commissioner Morrow, Congress should pass a law that owners of property may be compelled to take action to prevent dirt, sand or gravel from falling or being washed upon the sidewalks, streets or alleyways abutting upon parking in front of their property. He has been informed by the Assistant Corporation Counsel that a successful prosecution could not be conducted against a property owner for not keeping the sidewalk in front of his property in good condition when there is a public parking between the sidewalk and the property.

RAPID TRANSIT

Receivers Improve Management of Cleveland Roads

Cleveland, O.—The policy of the municipality, which called for "more cars in the rush hours when they are most needed and fewer during the remaining hours when cars are less needed," has been overthrown by the traction receivers. "I do not think the people of Cleveland want that arrangement," Receiver Bicknell said. He declared that in the new schedules about to be made service outside of the rush hours is being quickened from six to five minutes, from five to four minutes and from four to three minutes. In various parts of the city increased midday service is to be given. Receiver Bicknell explained that the morning rush hour service is to be bettered. The long period it covers makes improvement easier than on the evening rush service, he pointed out. Under present conditions, he added, the evening schedule is almost up to capacity. In working out the details of the new schedule a lack of cars has been one of the stumbling blocks. The supply of 700 is the average for a city of the size of Cleveland, but of this number many are available only for Summer service; others are not quite equipped with motors. The receivers could make use of fifty more motors immediately.

Law in Doubt; Salaries Paid

New York, N. Y.—The application of Adolph Gubner as a taxpayer for an injunction to restrain the city from continuing to pay out money for the use of the Public Service Commission was denied by Justice Gerard in the Supreme Court. Briefly stated, Justice Gerard doubts whether it is any more unconstitutional for the Legislature to make the city pay the salaries and expenses of the First District Commissioners than it is to make the city pay the compensation to Supreme Court Justices sitting in the First Department. In view of this doubt he thinks it better to deny the injunction and let the appeal courts pass upon the law than to grant the injunction and thereby practically put an end to the functions of the commission. Throughout the decision there runs a strain showing that in his own mind Justice Gerard doubts the constitutionality of the law creating the commission, on the technical ground that the law combines a local and a general object.

Cannot Compel Ferry Service

New York, N. Y.—The Public Service Commission has decided that it has no power to compel the Long Island Railroad Company to resume the ferry service between Long Island City and James Slip, a service that was discontinued because it was unprofitable. This decision is based on the fact that the charter of the Long Island Railroad Company does not require that it shall maintain the ferry service. A municipal ferry is suggested as the only remedy, the taxpayers to stand the losses.

MISCELLANEOUS

Annapolis 200 Years Old

Annapolis, Md.—Observance of the two hundredth anniversary of the granting by Queen Anne of England of the first charter of Annapolis in a three days' celebration took place recently, beginning with historical exercises at the State House. The chief event was the laying of a cornerstone of a memorial fountain, commemorating the first settlement of the city and the planting here of religious liberty. Special religious services were held in all the churches.

Smoke Nuisance Abated 75 Per Cent

Atlanta, Ga.—Smoke Inspector J. N. Squires states that the smoke nuisance has been abated 75 per cent., and lays the blame for whatever smoke there is on the high buildings around the railroads whose stacks emit black smoke. "Engines are forbidden to fire after leaving Simpson street," said Mr. Squires. "Hence the only smoke you see near the viaducts is white smoke. This comes from the exhaust and cannot be prevented, as you must have an exhaust to run an engine. The white smoke is mostly steam and has no soot. The trouble comes from the high buildings. Their smoke blows down on the street. As for noises, an engine is obliged to ring its bell."

Rents Advanced at City Markets

Boston, Mass.—The Common Council, in concurrence with the Board of Aldermen, has adopted the Market Committee's recommendation for an increase in the rentals of public markets. The report recommended renewals under a ten-year lease at a 12½ per cent. increase in rental, with the exception of the space leased to the Ames Plow Company, which the committee recommended be increased from \$3,000 to \$5,000 per year.

Abrogate Ordinance to Protect Horses

Milwaukee, Wis.—Assistant Superintendent A. F. Berwig, Badger State Humane Society, has sent a communication to the Council asking for amendment of an ordinance passed last June, which provides that no vehicle be left standing in the street except with its right side to the curb. This, contends Mr. Berwig, will be responsible for much suffering on the part of horses, particularly those used in hack and express service. He will ask that this law be changed to permit horses to stand without being obliged to face icy blasts and blinding snowstorms. It may be asked that a temporary suspension of the ordinance apply not alone to rigs used at night, there being considered the comfort of express and dray animals.

Draws Line at Announcement of Sunday Sales

Norfolk, Va.—Upon learning that a pharmacy had advertised a special sale of candy Saturday and Sunday, Col. Harry Hodges of the Board of Control called up Sergeant Knapp of the Police Department and ordered that an officer be sent to this store and instruct the owner to take down the sign. Detective Sam Cotton was detailed to inform the drug store that the sign must be taken down and that it was against the law for candy to be sold on Sunday.

No Cesspools in Alleys

Sacramento, Cal.—Trustee Carragher has introduced in the Board an ordinance prohibiting property owners from putting cesspools and oil tanks in alleys. Those already put in the alleys may be ordered out. In the future owners of property will have to put their cesspools and oil tanks on their own property and not in the alleys.

Police to Kill All Dogs Without Tags

Terre Haute, Ind.—Mayor Lyons has named Spencer F. Ball, Lewis Cox and George M. Crane a committee to disburse the \$500 appropriated by the City Council to assist poor persons bitten by dogs in taking the Pasteur treatment at Chicago, and already several children have been sent to Chicago. The police shot nearly 200 unmuzzled dogs in two days. The order now is to shoot dogs which have no license tags, although they may be muzzled.

LEGAL NEWS

Summary and Notes of Recent Decisions—Rulings of Municipal Interest

SEVERE ASSESSMENT—ERROR

Andre vs. City of Burlington.—Where a property owner appeared before the City Council in local assessment proceedings, and made objections to the proposed sewer, he thereby waives defects or irregularities in the notice of intention to construct the sewer. It will be presumed that the City Council did its duty, and levied a special assessment according to the benefits accruing to abutting property owners. The assessment for special benefits according to the area of the abutting property, at so much per square foot, is proper. Even if a special assessment for benefits was made arbitrarily, and without reference to the actual benefits received as to certain property, the entire assessment should not be declared invalid, but the trial court should correct the assessment. The omission to assess certain abutting property for benefits because it had once been assessed for the same purpose, or for some other reason considered valid by the City Council, did not invalidate the assessment in the absence of fraud. The cost of proper manholes and catch basins for sewers may be included in the assessment against abutting property, and the city is not bound to pay the costs thereof, even if they drain the street as well as abutting property, and by the express provisions of Code. If the City Council, because of some act or omission, is wholly without jurisdiction to levy special assessment for local improvements, the jurisdictional question may be raised at any time and in any kind of proceeding. Under Code Supplement, 1902, forbidding the assessment of abutting property for local improvements for more than 25 per cent. of its value, the assessment of property worth \$250 should have been reduced by the trial court to one-fourth of that sum, but its excessive assessment did not render the whole assessment invalid.—Supreme Court of Iowa.

REGULATING GRADE OF SIDEWALK APPROACH

Converse vs. Incorporated Town of Deep River.—Code 1897, conferring on towns the power to regulate the grade of temporary sidewalks, confers a discretionary power other than to establish a fixed and uniform grade, and authorizes the town to require that a property owner, maintaining a temporary sidewalk in front of his premises, which had not been brought to the permanent grade, to connect his walk with the permanent walks by a plank incline on a specified grade, in order to eliminate a step.—Supreme Court of Iowa.

SIDEWALK ACCIDENT—LIABILITY

City of Bowling Green vs. Bowling Green Gaslight Co.—If a gas company, with the knowledge and consent of a city, has discharged steam into a city sewer under a sidewalk, it is the city's duty to notify the company to stop the flow while the sidewalk is being repaired, if the steam comes through the sidewalk so as to conceal the opening made therein, and also to warn pedestrians of the danger; otherwise, it is primarily liable to a pedestrian injured by falling into the hole, and cannot recover over against the company.—Court of Appeals of Kentucky.

ACCIDENT—DENIAL OF NOTICE

Bogart vs. City of New York.—Where, in an action against a city, the complaint alleged the filing of notice of intent to sue, the city would be presumed to have knowledge whether it was filed or not, so that its denial of knowledge or information sufficient to form a belief as to such allegation was frivolous.—Supreme Court of New York.

CHANGE OF GRADE—COMPENSATION

Dorsey vs. Town of Henderson.—A municipal corporation, exercising, without negligence or wanton purpose to injure abutting property, its authority to change the grade of its streets, is not liable for consequential damages to abutting property, unless a constitutional or statutory provision allows compensation therefor.—Supreme Court of North Carolina.

ASSESSMENT—EXEMPTION

City of Beaumont vs. Russell.—A street improvement assessment, not made in accordance with the Constitution and laws regulating the levy and assessment of ad valorem taxes, is not a tax within Constitution exempting the homestead from forced sale for any debt except, among others, taxes due thereon.—Court of Civil Appeals of Texas.

UNDERGROUND RAILWAYS—EMINENT DOMAIN

In re Low.—Railroads, surface or general, constitute an added burden upon the streets of a municipality, which the owners of the fee can prevent by injunction until compensated for the taking of their property. In construing Rapid Transit Act, 1894, as amended by Laws, 1901, to determine whether New York City is liable to abutters for damages through the construction of subways under streets, where the fee is not in the city, the Legislature is to be presumed to have known the law and the right of the owners of the fee to compensation for extra burdens placed upon it. As to matters which abutters have reasonable opportunity to foresee will be done in legitimate use of streets for public purposes, no liability for consequential damages, not due to negligence, is incurred by a municipality acting within statutory authority; but the rule is otherwise as to unforeseen burdens upon the street, which the courts have held not involved in the original taking. The Legislature cannot constitutionally authorize a municipality, in conducting a business enterprise, to appropriate private property rights in streets without payment of just compensation. Statutes are presumed to be constitutional, it being assumed that the Legislature intended to act within its limitations; and where one of two constructions, each equally reasonable, will render an act valid, it should be adopted. Rapid Transit Act 1894, as amended by Laws 1901, authorizing New York City to condemn "real estate and any rights, terms and interest therein, any and all rights, privileges, franchises and easements, whether of owners or abutters or others to interfere with the construction or operation of" an underground railroad, authorizes compensation for all property taken for purposes of the road, and contemplates the taking of the property rights remaining in the owners of the fee of a street, as well as those abutting upon the same, where the fee is in third persons. Under the Rapid Transit Act of 1891, as amended by Laws 1894, authorizing New York City to condemn property for underground railroad purposes, the measure of damages to the owner of the fee of a street in which the road is constructed is the full value of the property actually taken, without deduction, and just compensation for injury to the remainder, considering the market value of the property before and after the taking. Where the fee in a New York City street is in a third person, an abutter must be deemed to have had an easement or right of subjacent support for his premises, which the city could not take away without just compensation in constructing an underground railroad under the Rapid Transit Act of 1891, as amended by Laws 1894.—New York Supreme Court, Appellate Division.

ANNEXATION OF TERRITORY

Barnwell et al. vs. Town of Gravette.—Kirby's Digest relating to the annexation of territory to municipal corporations provides for the presentation to the County Court of a petition for annexation, and that 30 days shall be allowed for a notice of complaint against such annexation, and, where the complaint has been heard and dismissed, that 30 days must elapse before the order of annexation shall be made. Section 5575 provides that any person interested may appear and contest the granting of the petition. Held, that the delay before making the order of annexation is to allow all persons contesting the proceeding an opportunity to appeal, and a mere protest against the annexation, filed within the 30 days by such persons, though stating no reasons for attacking the validity of the proceeding, is sufficient to make them parties, and entitle them to an appeal.—Supreme Court of Arkansas.

CLOSING ORDINANCE

Village of Little Chute vs. Van Camp.—Legislative power cannot be delegated to an administrative officer, but a law may provide that it shall go into effect or be suspended on the ascertainment of a fact or a state of facts by an administrative officer or board. A village ordinance requiring all saloons to be closed between certain hours, "unless by special permission of the President," was invalid, as an attempt to confer arbitrary power on an executive officer to direct the enforcement of the ordinance or not, in his discretion.—Supreme Court of Wisconsin.

REMOVAL OF POLICE OFFICER—PENSION

Hodgins vs. Bingham, Police Commissioner.—Under Greater New York charter, authorizing the dismissal and the placing on the pension roll of a member of the police force disabled so as to be "unfitted or unable to perform full police duty," and section providing that no pension shall be awarded without a certificate of the police surgeons as to the cause and extent of the disability, a certificate that a member is unable to perform full police duty is sufficient to authorize his dismissal and the placing of his name on the pension roll.—Supreme Court of New York.

SEWER DEBT—CONSTITUTIONAL LIMIT

City of Logansport et al. vs. Jordan.—The obligation of a city for its portion of the cost of a sewer arises when the sewer is completed and accepted by the city within the Constitution, forbidding a city to become indebted in excess of 2 per cent. of the taxable property, and is not postponed until the final estimate, under Towns and Cities Act, 1905, of the benefits resulting to the city is made, and an assessment therefor levied against the city. A tax levy to pay an indebtedness forbidden by Constitution, Article 13, providing that no city shall become indebted in excess of 2 per cent. of the taxable property, is without warrant of law and may be enjoined. Where a sewer was not contracted for or furnished on the installment plan, and the part of its cost chargeable to the city would therefore have to be assessed against it as an entirety, the total assessment against the city cannot be paid in annual installments, and thereby an indebtedness within the Constitution forbidding a city to become indebted in excess of 2 per cent. of the taxable property, be avoided by the city levying a tax to pay each of such annual installments.—Supreme Court of Indiana.

CORPORATION TO ADMINISTER HOSPITAL

Ware et al. vs. City of Fitchburg et al.—Statutes, 1890, creating a corporation to administer a charitable trust created by a testator bequeathing property to a city to found and maintain a hospital, is valid within the power of the Legislature to control cities in their public affairs and in their administration of public charities, by controlling the selection of the officers or agents to whom the same are to be intrusted, and the corporation created is an agent of the city in the administration of the trust.—Supreme Judicial Court of Massachusetts.

ESTABLISHING BUILDING LINE—DUE PROCESS

Northrop vs. City of Waterbury.—A fortiori, the report of three freeholders signed by them as the "Board of Compensation" that all property owners were legally notified and heard is controlled by the city record reciting the manner of giving a notice which was insufficient. A landowner cannot be deprived of property by the establishment of a building line thereon by a city save by due course of law after having had an opportunity to be heard. Where a city in 1888 established a building line on property in a proceeding of which the owner had no notice, and of which she apparently had no knowledge until 1907, but the city had never entered on her land, her suit to enjoin its enforcement is not within the equity of General Statutes, 1902, providing that no person shall make entry on land except within 15 years next after his title shall first accrue, and no entry shall be sufficient unless action be commenced thereupon and prosecuted to effect within one year.—Supreme Court of Errors of Connecticut.

DEFECTIVE HIGHWAY—NOTICE

Forbes vs. Town of Suffield.—Under General Statutes, 1902, making the giving of a notice to a municipality of the receipt of injuries caused by a defective highway a condition precedent to a right to sue a municipality therefor, a complaint against a city for such injuries must allege the giving of such notice; service of the complaint containing the required information within the time within which notice is required to be given being insufficient.—Supreme Court of Errors of Connecticut.

STATUS OF OKLAHOMA CITIES

State ex rel. West, Atty. Gen., vs. Ledbetter.—A city of the second class under the laws in force in the Indian Territory prior to the admission of the State, having a population of more than 2,500, became upon the admission of the State, by virtue of section 10 of the schedule to the Constitution, a city of the first class under the laws extended in force in the State. The act of the Legislature, approved February 20, 1908, entitled "An act amending sections 1, 5, 6, of article 1, chapter 14 of an act providing for the incorporation and government of cities of the first class, of the Statutes of Oklahoma of 1893; amending section 1, of article 1, of chapter 6, of the Session Laws of Oklahoma of 1897, entitled 'An act amending sections 7 and 8 of article 1, chapter 14, of an act entitled 'An act providing for the incorporation and government of cities of the first class, Statutes of Oklahoma, 1893'; providing for the incorporation and government of cities of the first class, and declaring an emergency," and the provisions thereof do not apply to cities that were continued or became by section 10 of the schedule to the Constitution cities of the first class under the laws extended in force in the State.—Supreme Court of Oklahoma.

COUNCILMEN—QUALIFICATIONS—VALIDITY

Kahle vs. Peters, Mayor, et al., Schoew vs. Same.—The provisions of the charter of the city of Bluefield, requiring, among other things, as a qualification of membership in the Council, that "they shall each respectively be the owner of a freehold in said city for at least one year prior to their said election, such ownership to be evidenced by proper deeds of record in the county court clerk's office of Mercer County, West Virginia," and that "before entering upon the duties of their respective offices they shall severally take and subscribe an oath that they possess the above qualifications and are not subject to any of the disqualifications prescribed by this act," do not contravene any of the provisions of the Constitution of this State, and are therefore constitutional and valid.—Supreme Court of Appeals of West Virginia.

DAMAGES TO LEASED STEAM ROLLER

Cadwell vs. Town of Canton.—In an action against a town for injury to plaintiff's steam road roller while being used by defendant, plaintiff offered evidence that the roller was in good condition before the accident, but thereafter was worthless, and that the damages were as specified in certain letters received in evidence by agreement. The letters were from plaintiff's attorneys to a manufacturer of steam rollers and the latter's replies as to the cost of repairing the roller and as to what plaintiff's damages were. No other evidence as to the money damages was offered. Held, that evidence of the fair cost of repairs, less the increased value of the repaired machine, above its value before the injury, was admissible.—Supreme Court of Errors of Connecticut.

COUNCIL MEETINGS—INTOXICATING LIQUORS

Gale vs. City of Moscow et al.—Under the provision of section 13 of "An act to provide for the organization, government and powers of cities and villages," the Mayor or any three Councilmen have power to call special meetings of the City Council, the object of which meeting must be submitted to the Council in writing, and the call and object, as well as the disposition thereof, must be entered on the journal by the clerk. Under the provisions of the statute for special meetings of the City Council, where a meeting is called and all the members are present except two, one of whom was notified personally and requested the Mayor to excuse him from attendance, and the other Councilman was out of the county, and at such a distance from the city and place of meeting that he could not be notified within the time, and that he could not have attended the meeting if he had been notified, and it appears that he was not notified, held, that the Mayor and members of the Council present, constituting a quorum, had power and authority to transact business for which the meeting was called. An entry made by the City Clerk upon the journal at the time of a special meeting, setting forth that a call for a special meeting of the Council was made, and the object of the meeting and the action taken thereon by the Council and Mayor at such meeting, is a sufficient compliance with section 13 of "an act to provide for the organization, government and powers of cities and villages," approved February 10, 1899. Under the provisions of Constitution, providing that "any county or incorporated city or town may make and enforce, within its limits, all such local, police, sanitary and other regulations as are not in conflict with its charter or with the general laws," and the provisions of subdivision of an act entitled "An act to provide for the organization, government and powers of cities and villages," as amended, granting to cities and villages the power and authority to "license, regulate and prohibit the selling or giving away of any intoxicating malt, vinous, mixed or fermented liquors," held, that cities and villages within this State have the power and authority to prohibit the sale and giving away of intoxicating liquors within their respective territorial limits, and that they may properly pass ordinances to that effect. A license authorizing the sale of intoxicating liquors issued by the Board of County Commissioners is subject to the power and authority of any city or village to prohibit by proper ordinance or resolution the sale of intoxicating liquors within such jurisdiction, and one who procures a county and State license takes it subject to the provisions of the law granting the power of prohibition to the various municipalities of the State.—Supreme Court of Idaho.

INJURY TO TRAVELER—MANHOLE

Perry vs. City of Centralia.—In an action for injuries to a traveler in falling into an insufficiently guarded manhole at night, defendant's negligence in not properly guarding the manhole and displaying a signal light, and plaintiff's contributory negligence, held for the jury.—Supreme Court of Washington.

DISCUSSIONS, QUESTIONS AND ANSWERS

Readers of the Municipal Journal and Engineer are invited to send for publication in this department inquiries concerning such matters as can probably be answered from the personal experiences of others, or from information on file in this office. Any who can furnish the desired information are requested to do so, in addition to any reply which may be given by us.

It is especially desired that an exchange of opinions and discussions on mooted subjects find place here. We will welcome any opinions, whether or not we agree with them; requesting however, the omission of all personalities.

COST OF GAS PLANTS

Editor MUNICIPAL JOURNAL AND ENGINEER:

239 West 39th St., New York.

DEAR SIR:—My attention has been called to the letter of A. E. Miller. Will say the cost, to a large extent, depends upon the location and nature of the ground, population per square mile, number of consumers per mile of main, cost of coal and amount of residuals.

The following particulars may be useful, however. In large cities an average consumption of gas per head of population is 2,000 cubic feet; in small cities about 1,500 cubic feet, and in agricultural towns about 1,000 cubic feet. The gas rental per mile of main ought to be from \$1,500 to \$2,500. Cost of constructing the works and plant, roughly speaking, ought not to exceed \$3,500 for every million cubic feet of gas made per year. Cost of operating depends on local conditions, but may be taken as being from 40 cents to 70 cents per 1,000 cubic feet of gas sold. This includes the cost of coal, less income from residuals, cost of producing and distributing the gas, also working expenses, such as wages, salaries, purifying materials, repairs, renewals, rates and taxes.

Coal-gas plant is undoubtedly the best to adopt, and the plant should have an immediate capacity of 30,000 cubic feet per day.

I believe a plant of this size would cost, exclusive of land and law charges, about \$20,000.

Yours very truly,

AND. S. B. LITTLE,
Engineer.

Editor MUNICIPAL JOURNAL AND ENGINEER:

DEAR SIR:—Referring to inquiry of A. E. Miller as to "cost of gas plant" I would say for the benefit of your readers that there are a good many reasons why his indefinite question cannot have a definite answer.

The amount of gas sales appears to be dependent upon its price.

Thus, from 60 gas companies' reports in 1901 in towns less than 75,000 population in Massachusetts, the average sales are as follows:

Price per M.	Annual Sales per Capita.
\$2.25	383 cubic feet.
2.00	584 " "
1.75	843 " "
1.50	1187 " "
1.25	1669 " "
1.00	2393 " "

These results appear to be independent of the population between 2,000 and 75,000 inhabitants, although slightly varied by the characteristics of towns as to manufacture.

It is necessary to know the price at which gas is to be sold in order to fix the required capacity and cost of gas works for any town.

It is necessary to know the cost of gas coal and of gas oil, as well as the required candle-power of gas in order to fix the manufacturing cost of gas.

In fixing the capacity of works it is necessary to form an idea of the probable growth of the town in the next fifteen or twenty years, for it is a good deal cheaper to arrange for extensions of apparatus at the start than to be crowded for building room and to have to change or add to existing buildings in the wrong place.

It is a good plan to have the building capacity good for five years to come, and the land area for fifteen years' extensions.

Unclassified averages used in making these future estimates will surely mislead. It is necessary to make an estimate of the cost of gas mains from the known street distances of the consumer's locality with regard to the fixed location of works and the gas pressures to be maintained. When this is done it is

possible to fix the process of gas making and to estimate: *First*.—The cost of the works and mains per annual thousand of gas capacity.

Second.—The cost of the works and mains per thousand of gas sales for each coming year.

Having done this, a percentage of profit and depreciation should be computed for each year for the required capital investment per annual thousand of sales.

The amount resulting from this percentage of investment should be added to the manufacturing and distributing cost of gas per thousand to obtain the fair selling price per thousand giving largest gross profits.

In order to get a definite and reliable reply to a question as to the *cost of gas works*, we must know:

The manufacturing and distributing cost of gas.

The price of gas coal.

The price of gas oil.

The candle-power of the gas.

The selling price fixed.

The cost of land required.

The probable growth in population of the town.

The present population.

The distribution and characteristics of probable consumers.

The cost of building and special materials, freight rates included.

The predetermined sales each year for series of years.

The capacity of works fixed at outset.

The method of making gas adopted after looking into the cost of gas coal and gas oil and the selling price of residuals.

Omitting a few abnormal results, the investment in small gas works in Massachusetts appeared to range from \$2.23 to \$13 per annual thousand of sales. Speaking generally, it appears as if the larger investments resulted from the higher prices of gas.

It is not possible to definitely and reliably answer an indefinitely stated question as to the cost of gas works, or for analogous reasons the cost of electric light stations.

Respectfully,

WM. D. MARKS.

PAVING BRICK SPECIFICATIONS

Editor MUNICIPAL JOURNAL AND ENGINEER:

DEAR SIR:—On the subject of "Brick Pavement Construction," I read, with interest, your editorial in an August number. Permit me to suggest (what you probably know) that in addition to a proper concrete foundation and proper sand cushion, it is necessary for the success of brick pavements that there are certain qualities which paving bricks must meet in order to enable manufacturers of paving bricks to do a continuous business in future years.

After examining successful brick pavements and testing bricks taken from them, I am of the opinion that, when the following requirements and tests are inserted in specifications and lived up to by testing bricks taken from shipments received, before being used in a pavement, the best grades of brick pavements will be assured, provided also that the joints between the bricks are properly grouted or filled with Portland cement grout as approved by the National Paving Brick Manufacturers' Association. The requirements which I have used and recommended for specifications for paving bricks are as follows:

(a) *Samples*. Paving bricks of block sizes must be submitted by the bidder and must be twelve (12) in number, properly boxed for sending by express to a testing laboratory or elsewhere. The box must be marked with the name of the bidder and date of bidding. Subsequent samples must be furnished by the bidder and be permitted to be taken by the proper representative of the city from subsequent shipments of blocks before the use of each shipment for paving on the streets under contracts of which these specifications form a part. The proper representative of the city, in case of doubt, may also select a reasonable number of sets of samples of twelve (12) blocks each, from pavements constructed under these specifications.

(b) *Requirements and tests* may be made of each kind or brand submitted by the bidders before awarding contracts, and are to be made at suitable intervals on samples taken from shipments of bricks before their use in the pavement. The samples can be taken from the cars or boats on arrival, or from piles adjacent to the location of the work or from the pavement. The tests shall be made by standard machines and uniform methods, and by a competent and experienced man, and if possible in a regularly equipped laboratory.

(c) *The size of bricks* shall be what is known as block size and shall not vary more than one-quarter inch ($\frac{1}{4}$ ") in any block. The preferred size shall be $8\frac{1}{2}$ " x $3\frac{1}{2}$ " x 4", exclusive of all lugs or projections; but bricks of other dimensions may be accepted for use provided the depth is four (4) inches.

(d) *Projections or lugs* are required and must either be the name of the brick on it or other suitable projections of about one-eighth ($\frac{1}{8}$ ") inch.

(e) *The brand or mark* of the brick, to identify it by name or otherwise, shall be on each brick. No blank bricks will be allowed to be used.

(f) *The shape* of the bricks must be uniform, regular and must not be distorted more than one-quarter inch ($\frac{1}{4}$ ") from a straight edge laid in any direction on them. Edges must be rounded. Repressed brick only shall be used.

(g) *The materials of the bricks* must be homogeneous, uniform, free from laminations, cracks and voids. Only very minute fire checks will be allowed. The materials shall be thoroughly annealed, fused and vitrified to toughness without excessive brittleness.

(h) *The color* of the exterior of the bricks shall be chocolate, light or dark brown or red, or a blending of these, and the interior shall be the same or a blending of the same colors. All bricks in any one pavement must be of the same shade.

(i) *Abrasion or rattler test* must be in the standard rattler and by the method of the National Brick Manufacturers' Association and American Society of Municipal Improvements. The maximum loss of any one brick shall not exceed eighteen per cent. (18%) of its original dry weight. The average loss of all bricks tested at any one time must not exceed fourteen per cent. (14%). The standard abrasion machine or rattler is a cylinder of fourteen staves or sides, one-fourth inch ($\frac{1}{4}$ ") apart, inside diameter 28 inches, length 20 inches, no interior shaft, revolving at 30 revolutions per minute for one hour, containing a charge of 300 lbs. of foundry iron shot of two standard sizes; and the charge of bricks for a test must approximate 1000 cubic inches, which is about nine (9) bricks of the block size. Record of each brick in each test must be kept.

(j) *The modulus of rupture or cross breaking* of any one brick must not be below 2500 pounds. The average of all bricks tested must not be below 2700 pounds by the regular formula: M equals $(3WL)$ divided by $(2AD)$, in which L equals 6 inches between supports. W equals breaking pressure. A equals area of cross section at break. D equals thickness of brick. The bricks shall be tested on the side and the pressure applied half way between the supports. At least three bricks must constitute this test.

(k) *The absorption of water*, by any one brick, shall not be greater than three per cent. (3%). The average absorption of all bricks tested shall not exceed two per cent. (2%) of their dry weight. The absorption tests shall be made upon either abraded or broken bricks by drying them for 12 hours in an oven and then soaking them for 12 hours in water. The increase in weight due to water absorbed, divided by the weight of dry brick, gives the per cent. of the water absorbed. At least three bricks must be used for this test.

(l) *The density or specific gravity* must be determined of the material of the brick, exclusive of its porosity, and no brick shall have a density of less than 2.30 and the average density of all bricks tested shall not be less than 2.35.

(m) *The hardness* is determined by Moh's scale for minerals, in which 100 is the diamond. The hardness of any brick must not be less than 60 and the average hardness of bricks tested must not be less than 65.

(n) *Crushing resistance* must not be less than 7500 pounds per square inch for any brick, and the average resistance to crushing of all bricks tested must not be less than 8500 pounds per square inch. The crushing tests must be made on about one-sixth middle sections of bricks with pressure applied in the direction of the whole thickness of the brick, which is the least dimension of the brick. At least three bricks must be used for this test.

(o) *Chemical tests* may be made at the option of the City Engineer or other authorized city official to determine if there are any water-soluble substances, as free lime, potash, soda, etc., in the bricks, and if present to more than a trace the entire lot of bricks, from which the samples have been taken, shall be rejected.

(p) *Records of tests* of each individual brick of each test, signed by the person or persons who make them, must be kept on file by the City Engineer or other proper official, during the

continuance of the contract, and must be open to inspection of all persons financially interested in the contract and to such other persons properly authorized to inspect these records.

(q) *Brands or makes of bricks previously used* in pavements in this city may, at the option or permission of the proper official, be used by contractors for new pavements, without submitting samples of said brands in connection with their bids; provided the bidders state the name of the brand or make of brick or block he will use, and provided the said brand or make shall have previously met all the requirements and tests above mentioned, said tests having been made by or for the city and records thereof found in the proper files of the city. This provision does not relieve the contractor nor city from having all shipments of bricks or blocks regularly tested, before use in pavements, as provided for by these specifications.

Sincerely yours,

J. W. HOWARD, Consulting Engineer.

CONCRETE SEWER PIPE

MUNICIPAL JOURNAL AND ENGINEER,

239 West 39th St., New York City.

GENTLEMEN: I wish to make use of your columns for the purpose of inquiring about concrete sewer pipe. Can you or any of your readers tell me what are the advantages of this pipe or the objections to it? I have seen it stated that concrete or cement sewer pipes will rapidly be dissolved by the sewage. Is this the case, and can you tell me of any instances where this has happened?

Any information I can obtain on this subject will be appreciated.

Yours very truly,

H. M. WISE.

This subject is one concerning which much has been printed during the past few years. The clay manufacturers have been especially active in publishing matter tending to show that cement pipe is almost sure to be dissolved by acids in sewage; among other things reports from chemists showing (what it did not need a special test to prove to the ordinary intelligent man) that cement in mortar is soluble in acid. Of this there can be no question; and it is likewise true that good salt glazed sewer pipe will resist all attacks of most, if not all, acids. What they have not showed is that sewage is likely to be acid in its reaction or, if so, that acid as dilute as it would appear in such cases would have any effect upon cement. In an article describing a reinforced concrete sewer in Wilmington, Del., which appeared in our November 18 issue, it is stated that a concrete pipe immersed for ten months in acid sewage showed absolutely no deterioration. Brooklyn has used cement pipe for sewage for fifty years, Milwaukee for more than thirty years; approximately 700 miles of cement pipe being still in use in these two cities. We believe that no serious disintegration of cement pipes has been noticed in either. The fact that all brick sewers, which have been used universally for a century, have cement mortar joints would indicate that the danger cannot be a serious one, since there are few records of such sewers failing through the disintegration of good mortar.

The Montana Agricultural College Experiment Station a short time ago published a bulletin describing its investigation of the apparent disintegration of cement in sewers due to alkali in the water; which investigation they are continuing with the idea of determining whether, in countries with alkali soils, cement is in danger of destruction from this cause.

We have not the space here to touch upon other points of advantage or disadvantage. We will gladly publish data or discussions concerning them from our readers, however.

THE MUNICIPAL INDEX

In Which Are Listed and Classified by Subjects All Articles Treating of Municipal Topics Which Have Appeared During the Past Month in the Leading Periodicals

ROADS AND PAVEMENTS

Highway Improvements; Notes On. By D. McD. Campbell. 4 pp., Canadian Municipal Journal, November.

Road Construction. How It Is Accomplished in Pennsylvania. By R. D. Beman. Paper before Good Roads Convention, Atlantic City. 1 p., Good Roads, November.

What the United States Government Is Doing in Road Building. By Allerton S. Cushman. Paper read before Good Roads Convention, Atlantic City. 1 1-2 pp., Good Roads, November.

Future Road. Its Wearing Surface. By Philip W. Henry. 2 pp., Engineering Record, Oct. 31.

Present and Future Roads. By R. Drummond and Allen Stevenson for the Road Surveyors' Association of Scotland. 2 pp., Surveyor, Nov. 6.

Present and Future Roads. By Robert Phillips. 2 pp., Surveyor, Nov. 6.

Practical Results from Good Roads. Paper presented at Good Roads Congress, Greensboro, N. C. By Joseph Hyde Pratt. 1 1-2 pp., Manufacturers' Record, Nov. 5.

Macadam Road Surfacing in the Past and for the Future. By Walter William Crosby. Paper before International Road Congress. 2 pp., Good Roads, November.

Macadam and Sewer Construction. Past season's work in Rockford and Freeport, Ill. Illustrated, 1 p., Municipal Journal and Engineer, Nov. 25.

Specifications and Notes on Macadam Road Construction. Abstract of paper by A. N. Johnson, State Highway Engineer of Illinois, read before the Western Society of Engineers. 4 pp., Engineering-Contracting, Oct. 21. Illustrated, 4 pp., Engineering News, Nov. 5.

Specifications for New Type of Macadam Road. Abstract of paper read before the Western Society of Engineers. By A. N. Johnson. 1 1-2 pp., Engineering Record, Nov. 7.

Economic Method of Spreading Broken Stone for Macadam and Comments on Macadam Specifications. 1-2 p., Engineering Contracting, Nov. 4.

Position of Coarse and Fine Stone in Macadam Roads. 3-4 p., Engineering Record, Oct. 31.

Binder on Macadam Roads, A Plea for Less. 1-3 p., Municipal Journal and Engineer, Nov. 25.

Cost of Constructing Macadam Roads. Work of the Illinois Highway Commission. 4 1-2 pp., Engineering Contracting, Nov. 18.

Cost of Roads in England Under County Councils. Paper presented before International Road Congress. 1 p., Surveyor, Oct. 30.

Gladwell System. Paper presented before International Road Congress. By Arthur Gladwell. 1 p., Surveyor, Oct. 30.

Earth Road, Experimental, in Illinois. From annual report of A. N. Johnson, Engineer State Highway Commission. 1 p., Engineering Contracting, Nov. 11.

Maintenance of Macadam and Other Roads. Informal discussion at the Annual Convention of the American

Society of Civil Engineers. Illustrated, 28 pp., Proceedings American Society Civil Engineers, August.

Main Road Maintenance in Cheshire. Paper presented before International Road Congress. By Harry F. Bull. 1 p., Surveyor, Oct. 30.

Maintenance of Highways in View of the Advent of the Motor Vehicle. By Clifford Richardson. 4 pp., Good Roads, November.

Wear and Tear of Roads. Paper presented to the International Road Congress. By W. J. Taylor. Illustrated. 2 pp., Surveyor, Nov. 13.

Modern Road Management. Paper read before the International Road Congress. By E. Purnell Hooley. 1 p., Engineering Record, Nov. 7. 1 p., Contractors' Record, Oct. 21.

Modern Traffic, Effect of, on Broken Stone Roads. Paper before International Road Congress. By L. W. Page. 1 1-2 pp., Surveyor, Nov. 13. 1 1-2 pp., Good Roads, November.

Destructive Effects of Automobiles Upon Macadam and the Use of Asphaltic and Tar Binder in Road Building. 1 1-2 pp., Engineering Contracting, Nov. 4.

Effect of Traction Engines and Heavy Motor Traffic Upon Road Foundations. Paper before International Road Congress. By R. J. Thomas. 2 pp., Surveyor, Nov. 13.

Dust Preventives. Report to United States Department of Agriculture. By Prevost Hubbard. 2 1-2 pp., Surveyor, Oct. 30; 2 pp., Nov. 6; 1 p., Nov. 13.

Tar Painting vs. Tar-Macadam. Paper presented before International Road Congress. By P. H. Maybury. 1 p., Surveyor, Oct. 30.

Road Surfaces and Tarring. Paper presented to the International Road Congress. By H. T. Wakelam. Illustrated, 4 pp., Contractors' Record, Oct. 28.

Bituminous Macadam. "A Dustless, Non-Slippery Roadway." Account of a Bituminous Macadam Road in New York. Illustrated, 1 p., Rider and Driver, Nov. 7.

Rubber Asphalt Roadways. New type of pavements in France and the claims made for them. By Consul-General Robert P. Skinner. Daily Consular Reports, Nov. 20.

Petrolitic Pavement: Method of Construction, Organization of Working Force and Data on Work Done. From California Journal of Technology. By J. C. Black. 2 pp., Engineering Contracting, Nov. 11.

Asphalting on Old Macadam. Illustrated, 3-4 p., Municipal Journal and Engineer, Nov. 4.

Asphalt Pavement Repairing. Street Repair Plant Described. Illustrated. 3-4 p., Municipal Journal and Engineer, Nov. 4.

San Francisco's Asphalt Plant. 1-2 p., Municipal Journal and Engineer, Nov. 11.

Artificial Paving Stone. A new German method. 1-4 p., Municipal Journal and Engineer, Nov. 18.

Pavements, Notes on. Paper presented before International Road Congress. By Leopold Trnka. 1 p., Surveyor, Oct. 30.

New Pavements and Construction Methods. Abstract of several papers before American Society of Municipal Improvements. 3 pp., Municipal Journal and Engineer, Nov. 4.

Street Work at Roanoke, Va. 1-3 p., Municipal Journal and Engineer, Nov. 11.

Parking City Streets, Recommendations for, at Ridgewood, N. J. 1-3 p., Engineering News, Nov. 5.

International Road Congress. Some opinions on the Congress. 3 pp., Surveyor, Nov. 6.

International Road Congress. Summary of Conclusions. 8 pp., Surveyor, Oct. 23.

International Road Congress. Buckinghamshire County Surveyor's Report. By R. J. Thomas. 1 p., Surveyor, Nov. 6.

Questions of International Road Congress, Report on, by the Road Surveyors' Association of Scotland. Illustrated, 2 1-2 p., Contractors' Record, Nov. 11.

Answers to Questions of International Road Congress. Paper presented to the International Road Congress. By Robert Phillips. 1 1-2 pp., Contractors' Record, Nov. 4.

Report on Questions. Paper presented to International Road Congress. By F. G. Carpenter. 3 pp., Contractors' Record, Oct. 4.

Answer to Questions. Paper presented before International Road Congress. By M. Horburger. 1-2 p., Surveyor, Oct. 30.

International Road Congress. General account of meeting. Illustrated, 11 pp., Good Roads, November.

Impressions of the International Road Congress. Opinions of a number of delegates. 4 pp., Good Roads, November.

First International Road Congress. Account of proceedings. 2 pp., Engineering Record, Nov. 7.

Paris Road Congress. Comments on Results from. 1-3 p., Municipal Journal and Engineer, Nov. 25.

Cost of Earthwork. Data compiled to assist road superintendents in making estimates. 1 p., Municipal World, November.

Cement Sidewalks. Methods of construction and errors to be avoided. Illustrated, 3 1-2 pp., Municipal Journal and Engineer, Nov. 4.

Amount of Materials Required for Cement Sidewalk Construction. 2-3 p., Engineering Contracting, Nov. 4.

Widening Michigan Avenue. Detailed Account of method and cost of widening a Chicago street. Illustrated, 2 1-2 pp., Municipal Journal and Engineer, Nov. 25.

Sub-sidewalk Space, Private Use of. Account of conditions in New York City. Illustrated, 2 1-2 pp., Municipal Journal and Engineer, Nov. 11.

Regrade, Seattle, with Particular Reference to Jackson Street Section. By Louis P. Zimmerman. Illustrated, 2 1-2 pp., Engineering News, Nov. 12.

Street Repair Association of San Francisco. Work done during past year; detailed cost of street reconstruction. 1 p., Municipal Journal and Engineer, Nov. 25.

SEWERAGE AND SANITATION

Sewers and Drains. By Harold G. Turner. Illustrated, 3 pp., Surveyor, Oct. 23.

Practical Sewerage and Sewage Disposal. By H. C. H. Shenton. 1-3 p., Local Government Journal, Nov. 14.

Reinforced Concrete Intercepting Sewer. Description of construction at Wilmington, Del. By Alex. J. Taylor. Paper before American Society of Municipal Improvements. Illustrated, 5 pp., Municipal Journal and Engineer, Nov. 18. Illustrated, 1-2-3 pp., Engineering Record, Nov. 7.

Concrete-Protected Sewer Pipe, Laying in Honolulu Harbor. Abstract of paper by C. H. Smith in Pacific Builder and Engineer. Illustrated, 1 p., Concrete, November.

Weaving Pipe, Loom for. Account of the manufacture of reinforcement for concrete pipe, from "Engineering." Illustrated, 3-4 p., Literary Digest, Sept. 26.

Concrete Manholes, Methods and Cost of Constructing Wooden Form for. By P. W. England. Illustrated, 2-3 p., Engineering Contracting, Oct. 28.

New Orleans Sewers and Water Works. Present condition of systems nearing completion. 1-2 p., Municipal Journal and Engineer, Nov. 25.

Cost of Sewer Connections. Details of cost in San Francisco. 1-4 p., Municipal Journal and Engineer, Nov. 18. **Unnecessary Catch Basins.** Comment on apparently unnecessary abundance in Chicago. 1-4 p., Municipal Journal and Engineer, Nov. 4.

Drainage Canal, Chicago. Annual Report of President Robert R. McCormick. 1 p., Real Estate News, November.

Testing Laboratory of the Bureau of Sewers, Brooklyn, and Some Tests of Sewer Pipe. Illustrated, 2-2-3 pp., Engineering Record, Nov. 21.

Sewage Purification vs. Water Filtration. Paper before American Society of Municipal Improvements. By George C. Whipple. 2 pp., Surveyor, Nov. 13. 1-1-3 pp., Engineering Record, Oct. 31.

Utilization of Sewage for the Production of Crude Oil and Ammonia. Paper read before the Institution of Mining Engineers. By Marmaduke F. Purcell. 2 pp., Water, Aug. 16. 1-2 p., Municipal Journal and Engineer, Nov. 25.

Septic Tank Patents. Abstract of paper before League of American Municipalities. By A. Marsden. 3-4 p., Municipal Journal and Engineer, Nov. 11.

Value of Septic Tanks in Sewage Disposal. Abstract and comment on paper by J. T. Thompson in Journal of Society of Chemical Industry. 1 p., Water, Aug. 15.

Hampton Doctrine of Sewage Purification. Synopsis of paper describing theory that purification is physical rather than bacteriological. By F. E. Lane. 3-4 p., Municipal Journal and Engineer, Nov. 4.

Modern Methods of Sewage Disposal as Applied to Public Institutions. By Frank Grove. Illustrated, 2-1-2 pp., Surveyor, Oct. 23.

Todmorden Sewage Disposal Works. Illustrated, 1-1-2 pp., Contract Journal, Nov. 4.

Royal Commission on Sewage Disposal, Notes on the Fifth Report of the. By Hugh S. Watson. 1-1-2 pp., Contract Journal, Oct. 21; 1 p., Oct. 28; 1 p., Nov. 4.

Royal Commission on Sewage Dis-

posal. Continuation of Report. 3 pp., Royal Institute of Public Health, November.

Royal Commission on Sewage Disposal. Review of Fifth Report. By H. C. H. Shenton. 2 pp., Surveyor, Oct. 23.

Sewer Air, Dangers of. Abstract of report of C. E. A. Winslow. 1-2 p., Engineering Record, Nov. 7.

Public Health, Relation of Forests to. By W. W. Ashe. 4 pp., Bulletin of North Carolina Board of Health, October.

Plague War, San Francisco's. By Augustine C. Keane. Illustrated, 11 pp., Review of Reviews, November.

Tuberculosis, Report on International Congress on. 25 pp., Bulletin, New York State Department of Health, October. Illustrated, 78 pp., Charities and Commons, Nov. 7.

Sanitarium for Consumptives at Birmingham. Illustrated, 1-1-2 pp., Municipal Journal and Engineer, Oct. 23.

WATER SUPPLY

Reservoirs, Design and Construction of Impounding. Paper read at the Birmingham meeting of the Association of Water Engineers. By Wm. Watts. 4 pp., Water, Aug. 15.

Reservoir Storage, Capacity and Cost. Averages of several hundred plants in the United States. 1-2 p., M. J. & E., Nov. 4.

Stripping Reservoir Lands. Paper read before the American Water Works Association. By J. M. Diven. 1-2-3 pp., Engineering-Contracting, Oct. 28.

Stripping of Reservoirs, with Special Reference to the Water Supply of New York City. 2-3 p., Engineering-Contracting, Oct. 28.

Compacting a Reservoir Embankment with a Petrolithic Rolling Tamper. 1-3 p., Engineering-Contracting, Nov. 4.

Proposition for Additional Storage Reservoirs in the Croton Drainage Area. Ill., 2-3 p., Engineering News, Nov. 5.

Proposed Reservoir System in the Ohio River Basin. A reply to Major H. C. Newcomer. By M. O. Leighton. 4 pp., Illustrated, Nov. 5.

Forests and Reservoirs in their Relation to Stream Flow, with particular reference to Navigable Rivers. Paper presented to the American Society of Civil Engineers. By Lieut.-Col. H. M. Chittenden. 1-1-2 pp., Engineering News, Oct. 29.

Forests and Floods. Extracts from an Austrian Report of Floods on the Danube, with Application to American Conditions. Paper presented to the American Society of Civil Engineers. By Lieut.-Col. H. M. Chittenden. Ill., 4 pp., Engineering News, Oct. 29.

Water Works at Canton. Brief description of sanitary value of water works recently opened. Vice Consul-General Willard B. Hull. 1 p., Daily Consular and Trade Reports, Oct. 31.

Water Supply of San Francisco, Cal. By C. E. Grunsky. Ill., 52 pp., Journal of Association of Engineering Societies, September.

Catskills Water Supply. Ill., 1 p., Leslie's Weekly, Nov. 9. 2-3 p., Fire and Water Engineering, Nov. 28.

Water Supply of Cleveland. 2-3 p., Fire and Water Engineering, Oct. 28.

Water Works of Wooster, O. Ill., 2-3 p., Fire and Water Engineering, Nov. 11.

Origin and Development of the

Water Works of Winona, Minn. 2 pp., Water and Gas Review, November.

Report on Bridgeport, Conn., Water Supply. Ill., 1 p., Fire and Water Engineering, Nov. 11.

Rainfall and Run Off near San Francisco, Cal. Discussion of paper read before American Society of Civil Engineers. By C. E. Grunsky. 22 pp., Proceedings American Society of Civil Engineers, August.

Report of the Pennsylvania Water Supply Commission: Forest, Stream Flow and Flood Control. 1 p., Engineering News, Nov. 19.

Artesian Wells at San Bernardino, Cal. Ill., 2-3 p., Fire and Water Engineering, Oct. 28.

Pipe for Water and Gas, Modern Welded. Paper read before the American Gas Institute. By F. N. Speller. 1-1-3 pp., Engineering News, Nov. 5.

Bridges, Water Pipe on Railroad. Objections to such location. 1-3 p., Municipal Journal and Engineer, Nov. 11.

Flow of Water in Pipes and Flumes, with charts for calculating effect of friction. By Franklin Van Winkle. Ill., 6 pp., Power, Nov. 10.

Vaults for Valves, Methods of Constructing Concrete. By Carroll Beale. Ill., 2 pp., Engineering-Contracting, Nov. 18.

Pumping Plants, Gas Power. By Charles A. Hague. Ill., 1 p., Fire and Water Engineering, Nov. 25.

Neglect of Pumping Machinery, Illustration of Deterioration due to. 1 p., Municipal Journal and Engineer, Nov. 4.

Water Filtration at Pittsburg. Description of large plant about completed. Ill., 3 pp., Municipal Journal and Engineer, Nov. 11.

Cincinnati's Water Filtration Plant. Description of filters, controlling valves and other appliances. Ill., 5 pp., Municipal Journal and Engineer, Nov. 4.

Plans for Mechanical Filtration Plant at Evansville, Ind. 2-3 p., Engineering Record, Nov. 21.

Some Experiences of a Small Water Works in Filtering Ohio River Water. Abstract of paper before Central Water Works Association. 1-4 p., Water and Gas Review, November.

Torresdale Preliminary Filters of the Philadelphia Water Supply. Ill., 3 1-2 pp., Engineering Record, Nov. 14.

New Filtration Plant of Pittsburg. Ill., 1 1-2 pp., Fire and Water Engineering, November.

Cost of Operation and Maintenance of Sand Filters at Reading, Pa. Data from the report of Emil G. Nuebling. 1 p., Engineering-Contracting, Oct. 28.

Water Rates. General discussion of the subject. By Don E. Mowry. 1-1-2 pp., Municipal Journal and Engineer, Nov. 11.

Cost-Keeping System, Office, Accounting and. Department of Greater Water Supply, People's Water Company, Oakland, Cal. Ill., 3 pp., Engineering Record, Nov. 14.

Water Works Valuation. Special reference to recent decision of Supreme Court of Maine. By Leonard Metcalf. Paper read before the American Society of Civil Engineers. 73 pp., Proceedings A. S. C. E., October.

Sanitary Water Supplies for Dairy Farms. By B. Meade Bolton. From Bulletin No. 41, Hygienic Laboratory, Treasury Department, U. S. A. Ill., 6 pp., Water, Aug. 15.

Milk Supplies, Water and Its Relation to Pure. 2 pp., Water, Aug. 15.

STREET LIGHTING AND ELECTRIC POWER

Street Lighting. Extracts from paper read before the Illuminating Engineering Society. By H. Thurston Owens. 1-3 p., *Progressive Age*, Nov. 16.

Value of Street Lighting. By H. Thurston Owens. Ill., 2 1-2 pp., *American Gas Light Journal*, Nov. 23.

Municipal Lighting. Causes of Failure in. Paper read before the Ohio Electric Light Association. 3 pp., *Concerning Municipal Ownership*, November.

Chicago Municipal Lighting Plant. Discussion of recent report of experts on its finances. 1 p., *Municipal Journal and Engineer*, Nov. 18.

Features of Municipal Lighting in Chicago. Past and Present. 1 1-2 pp., *Electrical Review*, Nov. 21.

Gas, Street Lighting with, in Europe. By E. N. Wrightington. 1-2 p., *Progressive Age*, Nov. 2.

Gas Service, Rules and Regulations of the Wisconsin Utilities Commission Concerning. 5 pp., *Pacific Municipalities*, October.

Power Gas, Cheap. Details of German Ore-briquetting and Coal-economy Inventions. By Consular Agent John B. Brewer. 2 pp., *Daily Consular Reports*, Nov. 12.

Electric Plants, Cost of. Discussion, with data from several existing plants. By Alton D. Adams, 1 1-2 pp., *Municipal Journal and Engineer*, Nov. 18.

Tungsten Street Lamps, Severe Lighting Test on, at Hackettstown, N. J. Ill., 1-2 p., *Electrical Review*, Nov. 17.

Electrolysis of Water Mains in Newark, N. J. 1 1-3 pp., *Engineering Record*, Nov. 14.

Water Power, European. National Project in Norway. By Consul-General Henry Bordenich. Austrian Project. By Consul Joseph I. Brittain. 1 1-2 pp., *Daily Consular Reports*, Oct. 20.

Preliminary Studies in Connection with the Development of Hydraulic Power. 7 pp., *Applied Science*, November.

Movable Dams and Locks at the Power Plant in the Chicago Drainage Canal. Ill., 3 pp., *Engineering News*, Nov. 12.

FIRE AND POLICE

Fire Dangers from Hot Air and Steam Pipes. By A. Lindback. 1-2 p., *Western Municipal News*, November.

Handling of Live Wires and Fire Streams. Account of experiments at Altoona, Pa. 1 p., *Electrical Review*, Nov. 5.

Alleged Danger to Firemen from Playing Fire Streams on Live Wires. 2-3 p., *Engineering News*, Nov. 19.

Chelsea Conflagration. By Henry A. Spencer. 2-3 p., *Fire and Water Engineering*, Nov. 4.

Working Hours, Question of, by a Fireman. By Louis Tennant. 2-3 p., *Fireman's Herald*, Nov. 7.

Fire Alarm System of To-day. By Albert M. Kimball. 1 p., *Fire and Water Engineering*, Nov. 11.

Fire Alarm Boxes. Abstract of paper before International Association of Fire Engineers. By John J. McMahon. 1-2 p., *Municipal Journal and Engineer*, Nov. 4.

High Pressure Water System and Fire Department Improvements, New York's. 1 p., *Fireman's Herald*, Nov. 14.

Test of New High Pressure Fire Protection System in New York. Ill., 1-2 p., *Engineering News*, Oct. 29.

Water System of St. Louis. 1-2 p., *Fire and Water Engineering*, Nov. 4.

Fire Hydrants, Metering. Editorial opposing this. 1-3 p., *Municipal Journal and Engineer*, Nov. 11.

Hose Couplings, Standard. Paper read before the Pacific Coast Chiefs' Association. By H. W. Bringham. 1 1-2 pp., *Fireman's Herald*, Nov. 14.

Fire Resistance, Concrete and. Some comparative tests. Ill., 6 pp., *Concrete*, November.

Underwriter Critics, Reply to. By Chief O'Connor, New Orleans. 3 pp., *Fireman's Herald*, Nov. 7.

Fire Departments, Lowell and Lynn. Reports of Committee on Fire Prevention and comment of Chiefs Hosmer and Harris on the reports. 3 pp., *Fireman's Herald*, Nov. 21.

Worcester, Mass., Fire Department. Ill., 1 p., *Fire and Water Engineering*, Oct. 28.

GOVERNMENT AND FINANCE

Municipal Legislation in Iowa. Report of Committee to League of Iowa Municipalities. 8 pp., *Midland Municipalities*, November.

Petitions in Municipal Government. Discussion of new charter of Haverhill, Mass. 1-2 p., *Municipal Journal and Engineer*, Nov. 18.

Ordinance, Electrical, for Atlanta, Ga. 1-2 p., *Electrical Review*, Nov. 7.

Municipal Trading. Account of the profits of enterprises in Nottingham. By Consul Frank W. Mahin. *Daily Consular and Trade Reports*, Nov. 14.

Local Option Movement. By S. E. Nicholson. 5 pp., *Annals of American Academy of Political and Social Science*, November.

Local Option and Its Results in Ohio and Georgia. By A. W. Clarke and M. H. Armor. 6 pp., *Annals American Academy of Political and Social Science*, November.

Suppression of the Raines Law Hotel. By John P. Peters. 11 pp., *Annals American Academy of Political and Social Science*, November.

State Dispensaries of South Carolina. By Niels Christensen, Jr. 10 pp., *Annals American Academy of Political and Social Science*, November.

Taxation, Incidence of. By C. A. Pleydell. 1 1-2 pp., *Western Municipal News*, November.

Taxation of Hydraulic Power Development. Legal decisions. 2-3 p., *Engineering Record*, Nov. 21.

Rates for Public Service, Fair. Abstract of paper read before the American Society of Civil Engineers. By Leonard Metcalf, 1 2-3 pp., *Engineering Record*, Nov. 7.

Unbusiness-like Municipal Methods. 1-3 p., *Municipal Journal and Engineer*, Nov. 4.

Accounting and Investigations, Corporation. By F. H. Macpherson. 9 pp., *Journal of Accountancy*, November.

STREET CLEANING AND REFUSE DISPOSAL

Street-Cleaning Apparatus, Use of Auto. Account of costs and efficiency. 2 pp., *Gesundheits-Ingenieur*, Nov. 7.

Street Sprinkling at Newport. Cost, amount of water used, number of teams, etc. 1-2 p., *Municipal Journal and Engineer*, Nov. 11.

Railway Sprinkling Cars. Description of car recently adopted in Chicago. Ill., 1-2 p., *Municipal Journal and Engineer*, Nov. 4.

City Refuse, Utilizing. Abstract of papers describing English practices in utilizing cinders, etc. 1 p., *Municipal Journal and Engineer*, Nov. 18.

New Refuse Destructor for West New Brighton, Borough of Richmond, New York City. Report of J. T. Fetherston. Ill., 2 1-2 pp., *Engineering News*, Nov. 5.

Garbage Disposal in the Northwest. Report of special San Francisco committee on three plants. 3-4 p., *Municipal Journal and Engineer*, Nov. 25.

Operating Results of the Buffalo Refuse Utilization Plant. Ill., 1 2-3 pp., *Engineering Record*, Nov. 7.

TRAFFIC AND TRANSPORTATION

Fares, Joint, and Through Routes in New York. Ill., 8 1-2 pp., *Electric Railway Journal*, Nov. 7.

Hearing in Joint Rates and Through Routes in New York. Abstract of the testimony of Charles F. Nebelacher. 7 pp., *Electric Railway Journal*, Oct. 31.

Transfers, Street Railway. By Major-General William A. Bancroft. 2 1-2 pp., *Public Service*, November.

Accounts for Street Railways. Prescribed by the New York Public Service Commission, Second District. Abstract of the order of the Commission. 2 pp., *Electric Railway Journal*, Nov. 14.

Cleveland, Receivership of Municipal Traction Company, of. 3 pp., *Street Railway Journal*, Nov. 21.

Cars, New, of the Chicago Railways Company. Ill., 5 1-2 pp., *Electric Railway Journal*, Nov. 7.

Trolley Construction, Catenary. Paper read before the American Society of Civil Engineers. By Oliver S. Lyford. Ill., 17 pp., *Proceedings American Society of Civil Engineers*, August.

MISCELLANEOUS

Concrete Work in Lake Park, Milwaukee. Ill., 2 pp., *Cement World*, November.

Suggestion for the Surfacing of Concrete Masonry. By Elwyn E. Seelye. 1-3 p., *Engineering News*, Nov. 12.

Hardening Process and Durability of Portland Cement. 2-3 p., *Engineering-Contracting*, Nov. 4.

Testing Laboratories for Concrete and Cement. By Cecil H. Desch. Ill., 6 pp., *Concrete*, November.

Test of Cement with the Addition of Colloids. By H. M. McGee. Ill., 4 pp., *Cement Age*, November.

Waterproofing Concrete Bridge Floors. Abstract of report of committee to Association of Railway Superintendents of Bridges and Buildings. 1 1-2 pp., *Waterproofing and Fireproofing*, November.

Methods of Waterproofing Concrete Covered Steel Floors for Railway Bridges and Some Figures on Cost. Ill., 3 pp., *Engineering-Contracting*, Nov. 4.

Making Cement Waterproof. Account of a patented process. 2 pp., *Waterproofing and Fireproofing*, November.

Current Methods of Waterproofing Concrete Covered Bridge Floors. Ill., 1 p., *Engineering Record*, Oct. 31.

Failure of a Reinforced Concrete Pressure Conduit at Richmond, Va. Ill., 1-3 p., *Engineering News*, Oct. 29.

Clay, Government Tests of. Outline of what is to be done in this line. 1-3 p., *Municipal Journal and Engineer*, Nov. 4.

Masonry, Effect of Temperature Changes on. Discussion of paper read

before the American Society of Civil Engineers. By Charles S. Gowen. Ill., 22 pp., Proceedings American Society of Civil Engineers, August.

Bridge, Blackwell's Island. Comment on engineer's report of safety. 2-3 p., Engineering Record, Nov. 7.

Stresses in the Blackwell's Island Bridge under Full Specified Loading. Ill., 3 pp., Engineering News, Nov. 19.

Paper Certificate of Safety for Blackwell's Island Bridge. 1-3 p., Engineering News, Nov. 19.

Investigation of the Blackwell's Island Bridge. Editorial comment on reports. 1 1-2 pp., Engineering News, Nov. 12.

Safety and Carrying Capacity of the Blackwell's Island Bridge. Two expert reports. Ill., 9 pp., Engineering News, Nov. 12.

Carrying Capacity of Blackwell's Island Bridge. By Boller & Hodge. 3 pp., Engineering Record, Nov. 14.

Safe Live Loads for the Blackwell's Island Bridge. Report by Wm. H. Burr. Ill., 5 pp., Engineering Record, Nov. 14.

Manhattan Bridge Approach Viaducts. Ill., 1 2-3 p., Engineering Record, Oct. 31.

Construction of the Manhattan Bridge Approaches. Ill., 1 2-3 pp., Engineering Record, Nov. 21.

Construction of Pelham Bridge, New York. Ill., 2 1-2 pp., Engineering Record, Oct. 31.

Combined Concrete and Steel Girder Bridge, Monroe street, Brookland, D. C. By W. J. Douglas and W. P. Darwin. Ill., 1 1-3 pp., Engineering News, Oct. 29.

Method of Constructing Reinforced Concrete Highway Bridges in Ontario, with some figures on cost. Condensed from paper read by Owen McKay before the Association of Ontario Land Surveyors. Ill., 1 p., Engineering-Contracting, Oct. 28.

Walnut Lane Bridge, Philadelphia. Ill., 1-3 p., Engineering News, Nov. 5.

Cost Data for Reinforced Concrete Bridges. Report by R. H. Parsons on the O'Connor street bridge, Ottawa. Ill., 2 pp., Concrete Review, November.

Data of Weight and Cost of Five Steel Arch Bridges. 2-3 p., Engineering-Contracting, Nov. 4.

Simple Plan of Testing Large Bridge Members. Ill., 2-3 p., Engineering News, Nov. 12.

Ferry House Substructure, Municipal, New York. Ill., 4 pp., Engineering Record, Nov. 7.

Port of Rotterdam. Account of Quays, Harbors and General Shipping Facilities. By Consul-General Loren Listoe. 2 pp., Daily Consular Reports, Nov. 11.

Antwerp Port Development. Plans for Creating Comprehensive Docks and Harbor. By Consul-General Henry W. Diederich. 4 pp., Daily Consular Reports, Nov. 5.

Water Front of Manhattan Island. Suggested improvements for handling freight. 1 p., Engineering Record, Nov. 21.

New Dock Work at Liverpool. Ill., 8 pp., Concrete, November.

Closure of the Charles River Dam. 2 pp., Engineering News, Nov. 5.

Flood Protection in Grand Rapids, Mich. Ill., 3 pp., Engineering Record, Oct. 31.

Municipal Works of Copenhagen. By B. Ball. Ill., 2 pp., Surveyor, Nov. 13.

Municipal Works of Praha. By M. Calder. Ill., 2 1-2 pp., Surveyor, Nov. 6.

Building a City at Long Beach, L. I. Ill., 2 pp., Engineering Record, Nov. 21.

Beautifying Birmingham. Prizes offered for individual efforts on private property. 1-2 p., Municipal Journal and Engineer, Nov. 11.

Progress of the Garden City Movement in England. By Robert Brown. 1 1-2 pp., Arena, November.

Smoke Nuisance. Regulations governing coal consumption in Holland. By Consul Henry H. Morgan. 1 p., Daily Consular Reports, Nov. 11.

Civic Conversion of a City. How Grand Rapids, Mich., is being transformed by the combined efforts of influential citizens. By John Ihlder. Ill., 7 pp., World To-day, November.

Growth, Rational Municipal. By F. H. Sexton. 2 pp., Canadian Municipal Journal, November.

Washington, a Residential City. By John Hall. Ill., 5 pp., Home and Garden, December.

Contracting, Competitive System of, vs. Fixed Fee System. 1 p., Engineering-Contracting, Nov. 18.

Violation of Labor Law in Municipal Contract. Comment on recent case before the New York Court of Appeals. 1-2 p., Chicago Law News, Nov. 7.

Systematizing a Contractor's Office. Paper read before the American Public Works Association. By Frank B. Gilbreth. 1 p., Construction News, Nov. 7.

BOOK REVIEWS

Sewer Construction. By Prof. Henry N. Ogden, Associate Member American Society Civil Engineers; Professor of Sanitary Engineering, Cornell University; Special Assistant Engineer, New York State Department of Health. John Wiley & Sons, New York. 335 pages, 192 figures. Price, \$3.

This book comprises, in a somewhat amplified form, a course of lectures given by the author, to the students in civil engineering at Cornell University, these lectures forming an elective sequel to that part of the course in civil engineering for which the author's book on "Sewer Design" is used as a text book. The book is an excellent illustration of the tendency of even technical and scientific works to abundant use of illustrations.

The author seems to have very thoroughly covered the details entering into the construction of sewerage systems, and in addition has one chapter devoted to screens, illustrating the various kinds used in sewage purification plants. Just why these should be described at length and no reference made to any other portions of commonly used structures employed in sewage purification, such as settling tanks, the author does not state. The manufacture and testing of vitrified clay pipe are described at length, together with materials employed for jointing pipes. Other subjects treated of are: Brick sewers, concrete sewers, reinforced concrete sewers, and combined concrete and brick sewers; manholes, catch basins, siphons, storm-water overflows and bell mouths; foundations, outfall sewers and house connections. Chapters are also devoted to the location of sewer lines and the taking of field notes; to methods of trenching and to estimating the cost of sewer work. The last 45 pages are devoted to a form of contract and specifications, which has been used by the author in actual work, together with explanatory clauses and comments upon the various items.

The practice of a great many cities in connection with the various materials and forms of structures employed are represented in exceptionally good illustrations. The chief criticism which we would make upon these is that the author in many places makes no attempt to offer the student or novice any advice as to which of the several plans set forth is preferable, or even to explain the reasons for the differences, or furnish any data which will assist in making such decision. The preface indicates that such explanations and opinions were given in connection with the lectures, the explanations being presented by means of lantern slides. It is unfortunate that these could not have been included in the printed work. We are glad to see, however, that the author calls attention to the undesirable features of several practices in construction which have acquired the endorsement of time, but which will not stand scientific investigation. Among these are the universal use of catch-basin pits and the use of lampholes and of dirt pans under manhole heads. Among omissions we note that of any reference to reinforced concrete pipes, of which there are two or three styles on the market. His treatment, however, of sewers constructed of concrete in place, both with and without reinforcement, is quite full. The designing of these is not considered, although a table is given taken from the Jackson Reinforced Concrete Pipe Company's catalogue (which is the only reference we find made to this kind of pipe), giving the size of the rods and bands used in their pipe. Altogether, the book is an excellent presentation, both in its illustrations and in the arrangement of its matter and lucidity of its explanations, of the best practice in sewer construction in this country.

Earth Slopes, Retaining Walls and Dams. By Charles Prelini. New York: D. Van Nostrand Company, 1908. Cloth, 9x6 inches, 9 illustrations, 129 pp. Price, \$2.

The work consists for the most part of the employment of graphical methods in solving problems concerning the slopes of earth embankments, the lateral pressure of earth against a wall and the thickness of retaining walls and dams. For this purpose the methods of Culmann, Rebhann, Weyrauch and Blanc have been employed. The work is divided into five chapters, the first of which concerns the stability of earth slopes and discusses the forces which determine the various slopes of earth embankments. The second chapter contains solutions of different problems that may be encountered in practical work by determining graphically the pressure of earth against a retaining wall. The third chapter contains three tables in which comparison is made between results obtained by the graphic and analytical method of determining earth pressure against a retaining wall. The fourth chapter discusses the design of retaining walls and determines the thickness of the bases of the most common types of wall both graphically and analytically. The last chapter discusses dams. As the book is intended by the author, who is professor of civil engineering Manhattan College, New York City, for the use of students, the discussion of the reliability of the various theories is omitted, in order to avoid confusion in the untrained mind of the student, who is unable to follow with profit complicated discussions based upon slight differences in the assumptions.

Text Book on Roads and Pavements. By Frederick P. Spaulding. Third Edition, Revised and Enlarged. New York: John Wiley & Sons. Cloth, 7½ x 5 inches, 10 illustrations, 340 pages. Price, \$2.

The author, who is professor of civil engineering, University of Missouri, has written this work for the use of students in schools and colleges. The methods employed in the construction and maintenance of highways have changed so much since the first edition was published in 1894 that the author found it necessary to practically rewrite the whole book.

The economic value of roads, the benefits to be derived from them are discussed in the introductory chapter. Under the title of drainage, the value of surface drainage, subdrainage by tiles or otherwise and culverts are considered. The location of roads, with reference to routes and grades, is given a chapter. Under the caption, improvement and maintenance of country roads, common earth, gravel, oil and sand clay roads are discussed. Broken stone roads are treated of in a chapter, which also includes a discussion of bituminous macadam. As a preliminary to the theory of permanent pavements, the general question of foundations is taken up. Chapters follow on brick, bituminous, wood block and stone block pavements. Special considerations regarding city streets occupy the concluding chapter.

INCORPORATIONS

American Water Supply Co. of New York, Jersey City, N. J.; capital, \$500,000. Incorporators: Lawrence W. Luellen, Hugh Moore and Austin M. Pinkham.

Bell Arc Light Co., Brooklyn, N. Y.; to manufacture gas fixtures and supplies for electric heating and lighting; capital \$100,000. Incorporators: Charles A. Campbell, 1174 Sterling place, Brooklyn; Monroe May, 250 West Eighty-second street, New York; Henry W. Van Allen, 77 Emerson place, Brooklyn.

Brownville and Williamsburg Water Co., Brownville, Me.; capital, \$25,000. Incorporators, E. M. Johnson and M. C. Moran, of Brownville.

Central Station Operating Co., New York, N. Y.; gas and electric light, heat and power all over the state; capital, \$25,000. Incorporators: William M. Sheehan, Edward F. McAviney, Frank L. Smith, New York.

Ford City Power Co., Ford City Pa.; to supply neighboring towns with light, heat and power.

Garwood Electric Co., Garwood, N. J.; capital, \$250,000. Incorporators: Edwin A. Keegan, George W. Atkinson and Axel K. Westerdahl.

Henry Ericsson Co., 159 La Salle street, Chicago, Ill., general contracting; capital, \$50,000. Incorporators: Henry Ericsson, Walter H. Ericsson, Charles J. Youngdahl.

Jamestown Water Works Co., Jamestown, N. Y.; capital, \$10,000. Incorporators: Jno. L. Winter, Geo. W. Piersol, Marion H. Roberts, Thomas B. Johnson, Pleasant M. Lewis, Richard Miller and David M. Clark.

Kern Electric Co., Owensboro, Ky.; capital stock, \$6,000. Incorporators: W. J. Kern, E. L. Holbrook, C. G. Kern and Frank H. Miller.

New Jersey Clay, Spar & Sand Co., Newark, N. J.; to operate sand pits, banks, gravel pits, stone quarries; capital, \$8,000. Incorporators: Augustus C. Darling, Whitehouse; Terence C. Curtin, 44 Myrtle avenue, Newark; Sydney Bell, Rutherford.

Russellville Water and Light Co., Pine Bluff, Ark.; capital, \$100,000; to take over the properties of the Russellville Ozark Light and Traction Company. Incorporators: A. Brewster, C. S. Bacon, Garland Brewster, and A. J. Bacon.

Sanitary Receptacle Co., Fort Worth, Tex.; to make garbage receptacles; capital, \$15,000. Incorporators: M. T. Taylor, A. G. Carter and W. B. Graham.

Thomasville Light & Power Co., Thomasville, N. C.; capital stock from \$10,000 to \$20,000; W. Lambreth, president, O. R. Cox, vice-president; C. E. Leak, secretary and treasurer.

NEWS OF THE SOCIETIES

Engineers' Society of Western Pennsylvania.—More than 200 members of the Engineers' Society of Western Pennsylvania were guests of the Bureau of Filtration, of Pittsburg, Pa., represented by Chief Engineer Morris Knowles, during a tour of inspection of the completed filtration works at Aspinwall, November 21. The party left the Pittsburg, Ft. Wayne & Chicago station of the North Side in special coaches, and upon their arrival at the Ross station were received by their host and F. E. Field, assistant to the chief engineer. Several members of the engineering corps of the plant and the society's entertainment committee, S. P. Grace, superintendent of the Bell Telephone Company of Pittsburg; A. Stucki, consulting engineer of the Pittsburg Pressed Steel Company; George T. Barnsley, chief engineer of roadways of Allegheny County, and E. K. Hiles, secretary of the association, acted as guides for the delegation. Among the prominent members of the Engineers' Society of Western Pennsylvania who visited the plant were former presidents Thomas Johnson, consulting engineer of the Pennsylvania Lines West; W. G. Wilkins, of the W. G. Wilkins Company; James M. Camp, of the Duquesne Steel Works of the Carnegie Company; Chester B. Albree, proprietor of the Chester B. Albree Iron Works, and Engineers Julian Kennedy and Emil Swensson. At the conclusion of the tour the party was served with light refreshments in one of the filtering galleries and returned to Pittsburg at 5 o'clock.

American Civic Association.—The American Civic Association elected the following officers at the recent meeting at Pittsburg, Pa.: President, J. Horace McFarland, Harrisburg; first vice-president and secretary, Clinton Rogers Woodruff, Philadelphia, and the following vice-presidents: Robert Watchorn, New York; Mrs. Edward W. Biddle, Carlisle, Pa.; George Leighton, Monadnock, N. H.; Fielding J. Stimson, Los Angeles, Cal.; David P. Jones, Minneapolis; treasurer, William B. Howland, New York.

Conference of Pennsylvania Mayors.—Mayor J. Benj. Dimmick, of Scranton, Pa., has called a conference of the chief executives of cities in the anthracite coal region of Pennsylvania. The object of the meeting is to consider plans for effectively bringing to the attention of the State Legislature the necessity for the better protection in this region from the settling of the surface over mines, with consequent damage to property.

City Club of Memphis.—At a meeting of the club, a report was submitted by F. W. Faxon, chairman of the special committee, recommending a general extension of the city limits, and that in connection with this legislation a bond issue of \$5,000,000 be provided for, so that the extensions of the sewer system and the laying out of other public improvements may be carried forward in the new territory without any great increase in taxation. The report contends that by taking such a course, instead of increasing the tax rate, it could be lowered by 25 to 35 per cent, and that such an issue would be a step in the right direction, in view of the need of the city taking supervision of the growth of the territory now outside the city limits and the present comparatively small bonded indebtedness.

New Jersey Sanitary Association.—The thirty-third annual meeting will be held at The Laurel-in-the-Pines, Lakewood, N. J., December 4-5. The following papers will be presented: December 4: "Sanitary Inspection of Schools," W. G. Schauffler; "The Necessity for Schools of Instruction for Health Officers," John L. Leal; "Symposium on Tuberculosis," four separate papers by E. B. Voorhees, William C. Smallwood, S. B. English and Theodore Senseman; "The Washington, D. C., Aqueduct and Filtration Plant," E. D. Hardy, M. Am. Soc. C. E.; "The Progress of Mosquito Extermination Work in New Jersey," John B. Smith. December 5: "Pollution of the Delaware River; Its Cause and Remedy," Harry M. Herbert; "The Modern Treatment of Sewage," Emil Kuitichling; "The Prevention of Dust on Highways," James Owen.

Canadian Society of Civil Engineers.—At the General Section meeting, held in Montreal November 19, papers were presented as follows: "Notes on Canadian Forestry," S. Gagné; "Mean Sea Level at Quebec and New York," W. Bell Dawson. Professor Brown's paper entitled "Tests of Reinforced Concrete Beams" was discussed. At a meeting of the Electrical Section, November 26, J. R. Bibbins will present a paper entitled "Some Considerations in the Application of Low Pressure Turbines to Power Generation." A meeting of the Mechanical Section will be held December 3.

City Club of Tacoma.—The City Club has been formed for the purpose of doing effective work in bettering the city government of Tacoma. Discussion is, according to the constitution, to be open and free upon all matters relating to the government and public affairs of the city, but allusion to partisan politics or any argument in behalf of a partisan candidate, as such, shall be prohibited. Officers of the club were elected as follows: President, Henry Rhodes; first vice-president, Herbert S. Griggs; second vice-president, W. B. Kennell; treasurer, P. C. Kauffman; secretary, C. E. Hodge; executive committee: Ralph Metcalf, Marshall K. Snell, T. J. Handforth, E. J. McNeeley and Emmett N. Parker.

Southeastern Improvement Society of Louisville, Ky.—The citizens of the southeastern part of Louisville held a meeting recently and a temporary organization was perfected. The purpose of the organization was set forth in a short talk by the chairman, Dr. Walter B. Gossett, when he said that the association hoped and expected to be a factor in the improvement and consequent beautifying of the city. The Southeastern Improvement Club is working for the beautifying of Shelby Park, new streets and a branch library; also to get better service on the Preston street car line. Temporary officers elected are as follows: President, Dr. Walter B. Gossett; vice-president, C. Rademaker; secretary, Charles Johanboeke.

The Merchants' Association of New York.—The secretary announces that the Trunk Line Association has authorized merchants' rates to this city for the spring, 1909, season. The special fare—a rate and one-half for the round trip—will be in effect under the customary certificate plan on January 16 to 19, inclusive, February 20 to 23, inclusive, March 6 to 9, inclusive, and March 20 to 23, inclusive, with the usual fifteen-day return limit.

New England Water Works Association.—The December meeting of the Association will be held at Hotel Brunswick, Copley Square, Boston, Wednesday, December 9. The programme follows:

10 o'clock—The headquarters in Tremont Temple will be open for the use of members.

11:30 o'clock—Meeting of the Executive Committee at the Headquarters, Tremont Temple.

1 o'clock—Lunch will be served at Hotel Brunswick, Copley Square.

2 o'clock—The following papers will be presented: "Wrought Iron Cement Lined Water Pipe," by Leonard Metcalf, Consulting Engineer, Boston, Mass. "Newton (N. J.) Water Works, with Special Relationship to the Storage and Diversion Features and Legal Proceedings Growing Therefrom," by Louis L. Tribus, Consulting Engineer, New York. "Informal Description of the Water Works of Havana, Cuba, Illustrated," by Bertram Brewer, City Engineer of Waltham, Mass. Topical Discussion.

Engineers' Club of Central Pennsylvania.—An illustrated lecture was delivered November 14 by George W. Fuller, of Hering and Fuller, consulting engineers, New York City, before members of the Club and of the Board of Trade, Harrisburg, Pa. Nearly all the members of City Council attended.

Charity Organization Society.—The International Tuberculosis Exhibit was brought from Washington, D. C., and opened to the public in New York at the American Museum of Natural History on November 30. The exhibit occupies 40,000 square feet of floor space and 110,000 square feet of wall space in three floors of the new northwest wing. The exhibit was opened on Monday evening at 8 o'clock by Mayor McClellan, Robert W. De Forest, president of the Charity Organization Society, presiding, and the speakers were Controller Metz, Prof. Henry Fairfield Osborn, Dr. A. Jacobi, Dr. Alfred Meyer and Health Commissioner Thomas Darlington. While the exhibit will be open to the public each weekday beginning with Tuesday, from 10 o'clock in the morning until 11 o'clock at night, and on Sunday afternoons for six weeks, many special meetings will be held. There will be a City Day, on which the Mayor and other city officials will speak; a State Day, when Gov. Hughes will be the principal speaker; a Church Day, a New Jersey Day, a Connecticut Day and others not yet announced. Competent demonstrators have been engaged for the entire period to explain to the visitors the significance of the various exhibits. Every device and implement of warfare on the "White Plague" known to modern hygiene and science will be shown.

American Institute of Electrical Engineers.—The Baltimore section of the Society met at the power plant of the Consolidated Gas, Electric Light and Power Company when A. S. Loiseaux, electrical engineer of the company, read a paper on "The Generation and Distribution of Electricity for Light and Power in Baltimore, Md."

Civic League of Fayette, Pa.—A civic league has been formed and the following committees appointed: Finance—G. W. Spalter, A. E. Thomas, Rev. E. D. Bevier, David Rosenberg. By-Laws—Rev. W. E. Howard, J. N. Pfelehardt, C. W. Beam. Law—J. A. Black, Rev. J. Jeffreys, Fred Clerihue.

Electrical Show.—The fourth annual electrical show, which is announced for the Coliseum, Chicago, Ill., for two weeks, Jan. 16-30, promises to be the most interesting and most comprehensive exposition of the kind ever given in America. John C. Schayer is in charge as assistant manager.

Calendar of Meetings

December 1-3.

Annual Conference of Sanitary Officers. Albany, N. Y.—Eugene H. Porter, State Commissioner of Health, Albany, N. Y.

December 1-4.

American Society of Mechanical Engineers.—Annual Meeting, New York City. —Calvin W. Rice, Secretary, 29 West 39th street, New York City.

December 2.

American Society of Civil Engineers.—Regular semi-monthly meeting, Society House, 220 West Fifty-seventh street, New York City.—Charles Warren Hunt, Secretary.

December 2.

Western Society of Engineers.—Regular Meeting, Monadnock Block, Chicago, Ill. —J. H. Warder, Secretary.

December 2-3.

Georgia Good Roads Congress.—Atlanta. —Call issued to municipal and county officers and members of civic organizations by Governor Hoke Smith.

December 9-11.

National Rivers and Harbors Congress. —Washington, D. C.

December 15-17.

American Institute of Architects.—Annual convention, Washington, D. C.—Glenn Brown, Secretary. The Octagon, Washington, D. C.

December 28-29.

American Institute of Chemical Engineers.—Annual meeting at Pittsburg, Pa. —Secretary, John C. Olsen, Polytechnic Institute, Brooklyn, N. Y.

January 13-14.

Iowa Brick and Tile Association.—Annual Convention, Mason City, Ia.—C. B. Platt, Secretary.

January 11-16.

National Association of Cement Users.—Annual convention at Cleveland, O.—Secretary, Geo. C. Wright, Harrison Bldg., Philadelphia, Pa.

January 13-14.

Iowa Engineering Society.—Meeting, Waterloo, Ia.—A. H. Ford, Secretary, Iowa City, Ia.

January 19-21.

American Society of Heating and Ventilating Engineers.—Fifteenth annual meeting, Engineering Societies Building, 29 West Thirty-ninth street, New York, N. Y.—W. M. Mackay, Secretary, P. O. Box 1818, New York, N. Y.

February 1-6.

National Brick Manufacturers' Association.—Twenty-third Annual Convention, Rochester, N. Y.—Theo. A. Randall, Secretary, Indianapolis, Ind.

PATENT CLAIMS

903,354. Gate-Valve. James M. Brown, Mansfield, Ohio. Serial No. 255,120.

In a gate valve, a casing made in two divided halves with an eccentric valve chamber between them, said parts having a passageway extending through the chamber, a plate valve pivoted in the chamber and having a hole arranged to register with the passageway, a pair of metallic seat rings held in perpetual rigid contact with the plate, at least one of said rings being adjustable, and a toothed wheel within the chamber arranged to oscillate the valve plate; said wheel being at the same side of the passageway as the pivot of the valve and in the plane of the valve substantially as described.

903,385. Method of Filtration. Ira H. Jewell, Chicago, Ill. Serial No. 355,550.

A method of filtering liquids which consists of passing a portion of the liquid through a granular bed and in introducing another portion of the liquid directly to an interior portion of said bed and filtering it through only a portion of said bed.

903,630. Bridge. Oscar Thomas, Grunberg, Germany. Serial No. 399,048.

The combination with a bridge superstructure and a supporting cable or chain; of flexible load-equalizing means between said cable and the superstructure.

903,633.—Device for Automatically Lighting and Extinguishing Gas-Lights by Varying the Pressure in the Mains. John M. Tourtel and William R. Mealing, London, England. Serial No. 407,513.

A gas-controller operated by temporary surplus gas-pressure, consisting of a casing divided into a lower, liquid-containing chamber and an upper chamber superimposed upon the lower chamber, the upper chamber being open to the air, means for supplying gas under pressure to the lower chamber; a tube connecting the two chambers and through which liquid passes from the lower to the upper chamber under the action of the gas pressure, and an outlet-tube communicating with the lower chamber and normally sealed by the liquid there-

in and adapted to be opened by passage of liquid from the lower to the upper chamber. 903,899. Pavement or Vault Construction. Henry C. Selpp, Coraopolis, Pa. Serial No. 396,184.

In a construction of a class described, the combination with the supporting bars, of a removable mold plate, and slidable means depending from said bars for supporting said plate in position under said bars and for permitting its removal.

903,993. Means for Charging Refuse-Deconstructors and Other Furnaces. Henry N. Leask, Egremont, England. Serial No. 392,006.

In an apparatus of the class described, the combination of a furnace, a chute exterior of and spaced from the furnace for supplying said furnace with fuel or the like, the furnace having an opening to receive the fuel, a door for closing the furnace opening and elevatable above the latter, and means connected to the door for closing the space between the chute and the furnace and movable simultaneously with the door to occupy a position around the furnace opening or be depressed below the latter opening.

903,997. Derrick-Swinging Mechanism. Oscar J. Martinson, Chicago, Ill., assignor to Monaghan Machine Company, Chicago, Ill. Serial No. 428,994.

The combination of a shaft, a drum fixed thereon, a wheel fixed on said shaft, a second drum loosely mounted on said shaft between said wheel and first drum, dogging means adapted to lock said loose drum against rotation with said shaft, said wheel and loose drum being provided with opposed friction surfaces, and means for locking said friction surfaces into driving engagement with each other.

904,056. Gate-Valve. Henry C. Farrell, Buffalo, N. Y. Serial No. 376,465.

A gate valve comprising a casing having a seat, a ball stopper having a compound lateral and axial movement relatively to said seat, and means for shifting said stopper comprising a carrier movable axially in the casing relatively to said seat, a supporting arm pivoted on said carrier and provided with an opening which receives said stopper and the bore of which bears against the stopper on one side of its center, and means for confining the stopper in said opening, substantially as set forth.

904,106. Road-Grader. Lewis E. Wild, Elmwood, Wis., assignor of one-half to Joseph F. Langer, Minneapolis, Minn. Serial No. 443,793.

In a grader, the combination with a main frame, and a pair of drag bars of unequal length pivotally connected to said frame at their forward ends, of an obliquely set scraper blade, and means connecting the ends of said scraper blade to said main frame for independent vertical adjustments.

904,114. Method of Softening Water. August Brandes, Hanover, Germany, assignor of one-half to the Firm of C. Neff, Hanover, Germany. Serial No. 382,389.

An improved method of softening spring and river water, consisting in passing the water in a thin stream over the surface of aluminum exposed to the action of light, until the water shows an alkaline reaction.

904,185. Arc-Lamp. Edward O. Dworak, Chicago, Ill. Serial No., 326,337.

In a regulator for arc lamps, the combination with a pair of pivoted tubes, of a sleeve within said tubes adapted to slide therein and to carry a carbon, a cam, a reciprocating ratchet bar supported on the outside of each of said tubes, a spring tooth on said sleeve which is adapted to engage the teeth of said ratchet bar, bearings for said ratchet bar, said ratchet bar having slots for engaging said bearings to limit the motion of said ratchet bar, a cam follower with which said ratchet bar is connected, electromagnetic operating mechanism for said cam, a circuit therefor controlled by the arc, a cross piece adjustably secured to said rod, lugs extending from each of said tubes, and a link adjustably pivoted to each of said lugs and to said cross-piece.

904,199. Metal Culvert. Bernhard W. Harris, Minneapolis, Minn. Serial No. 446,547.

A culvert, comprising pipe sections having laterally extending flanges formed on the ends thereof, the flange at one end of one pipe section having a forwardly projecting lip parallel substantially with the longitudinal axis of the pipe section, said lip being adapted to inclose the flange of the adjoining pipe section when the sections are placed end to end and be bent down around the flange of said adjoining section, thereby locking the culvert sections together.

904,389. Filter. John P. White, Fremont, Ohio. Serial No. 435,713.

In a filter, a filtering chamber filled with loose granular material, and a perforated weight gravitatingly supported directly on top of said material and provided with hinged marginal sections whose edges engage the side walls of the chamber.

THE WEEK'S CONTRACT NEWS

Relating to Municipal and Public Work—Street Improvements—Paving, Road Making, Cleaning and Sprinkling—Sewerage Water Supply and Public Lighting—Fire Equipment and Supplies—Bridges and Street Railways—Sanitation Garbage and Waste Disposal—Police, Parks and Miscellaneous—Proposals and Awards

To be of value this matter must be printed in the number immediately following its receipt, which makes it impossible for us to verify it all. Our sources of information are believed to be reliable, but we can not guarantee the correctness of all items. Parties in charge of proposed work are requested to send us information concerning it as early as possible; also corrections of any errors discovered.

BIDS ASKED FOR

STATE	CITY	RECEIVED UNTIL	NATURE OF WORK	ADDRESS INQUIRIES TO
STREET IMPROVEMENTS				
New York	Brooklyn	Dec. 2, 11 a.m.	Asphalt and granite repaving on concrete, regulating sts., etc.	Bird S. Coler, Boro. President.
New York	New York	Dec. 3, 3 p.m.	Furn. new 5-in. bluestone curbing, Broadway and 70th St.; also reblgd. rdwy. Eastern Blvd., inc. asphaltic mixture surface.	Henry Smith, Pres. Park Bd.
Missouri	Kansas City	Dec. 3	Furn. mat. grading 50,005 cu. yds. excav., 5,941 cu. yds. embank., 2,711 cu. yds. rock; also brick paving portion 2 alleys, repaving asphalt, 3 aves.	J. L. Darnell, City Engineer.
New York	New Rochelle	Dec. 3, 8 p.m.	Grading and laying flagging on Sickles ave.	Chas. W. Bryan, Chm. B. P. W.
Indiana	Peru	Dec. 4, noon	Bldg. joint County gravel road for Cass and Miami Counties.	Geo. Cann, Aud. Cass Co.
Washington	Olympia	Dec. 4, 2 p.m.	Grading, draining, etc., State Aid Road No. 27.	Jos. M. Snow, Sec'y State Hwy. Bd.
California	Los Angeles	Dec. 7	Bldg. comb. cement curb and gutter in 2 streets.	C. G. Keyes, County Clerk.
Montana	Anaconda	Dec. 7	Improving streets in District No. 54.	R. B. Lewis, City Clerk.
Indiana	Columbus	Dec. 7, 10 a.m.	Bldg. 10,770 ft. macadam road in Clay township.	John M. Davis, County Auditor.
Indiana	Greenfield	Dec. 7, 10 a.m.	Improvement of public highway for County.	Chas. H. Troy, County Auditor.
Indiana	Williamsport	Dec. 7, 1 p.m.	Bldg. gravel road in 2 townships, 15,742 ft. long.	R. L. Wink, County Auditor.
New Jersey	Red Bank	Dec. 7	Paving portions of Monmouth St. with brick.	A. C. Harrison, City Clerk.
Kansas	Kansas City	Dec. 7	Macadamizing DeFries and Gibb roads, resurf. 2 roads.	F. M. Holcomb, County Clerk.
Indiana	Decatur	Dec. 7, 10 a.m.	Bldg. 3 macadam roads in Washington, Preble and Kirkin twps.	C. D. Lewton, County Auditor.
Indiana	Crown Point	Dec. 7, noon	Bldg. gravel road in North township.	Charles A. Johnson, County Auditor.
Indiana	Huntington	Dec. 7, noon	Constructing macadam road in Huntington township.	John W. Weaver, County Auditor.
Indiana	Delphi	Dec. 7, noon	Bldg. 2 gravel roads in Democrat township.	M. G. Haun, County Auditor.
Indiana	Crawfordsville	Dec. 7, 10 a.m.	Grading, draining, gravel, J. B. Jones road, Walnut township.	Bennett B. Engle, County Auditor.
Indiana	Vernon	Dec. 7, 11 a.m.	Constructing 2 3-4 miles of pike road in Vernon township.	I. L. Thomas, County Auditor.
Michigan	Muskegon	Dec. 7, noon	Brick paving certain streets and alleys.	B. H. Tellman, City Recorder.
Indiana	Vincennes	Dec. 8, 2 p.m.	Bldg. 2 gravel roads, 3,205 and 1,300 ft. long.	John T. Scott, County Auditor.
Indiana	Bedford	Dec. 8, 1 p.m.	Bldg. 10,453 ft. Mitchell gravel or macadam road.	Walter G. Owens, County Auditor.
Indiana	Spencer	Dec. 8, noon	Constructing 15,305 ft. gravel road Montg., 12,500 ft. Jeff. twp.; 15,800 ft. macadam road Washn., 9,307 ft. Frank twp.	Geo. W. Edwards, County Auditor.
Indiana	Madison	Dec. 8, 1 p.m.	Bldg. 58,404 ft. macadam road Lancaster twp., 6.64 miles Smyrna.	G. F. Crozier, County Auditor.
Indiana	Bloomfield	Dec. 8, 2 p.m.	Bldg. gravel and macadam road, Stockton township.	Peter M. Cook, County Auditor.
Indiana	Washington	Dec. 8, 2 p.m.	Constructing 3 gravel roads in Washington township.	Thos. Nugent, County Auditor.
New York	Brooklyn	Dec. 8	Furnishing road roller at Navy Yard.	Bur. Sup. & Accts. Navy Yard, Washington, D.C.
Indiana	Laporte	Dec. 8	Constructing 6,222 ft. macadam road, Center twp.	Chas. H. Miller, County Auditor.
Pennsylvania	Beaver Falls	Dec. 8	Paving 6th St., 3,000 sq. yds.	Carl S. Donaldson, Boro. Engr.
New York	Brooklyn	Dec. 9	Asphalt block repaving 15,550 sq. yds., asphalt 19,340 sq. yds., granite 1,110 sq. yds. cement walks, 5 streets.	Bird S. Coler, Boro. President.
New Jersey	Salem	Dec. 9, 10:30 a.m.	Grading and placing gravel surface 3.31 miles road.	John J. Ayars, Dir. Bd. Freeholders.
Indiana	Huntington	Dec. 9, 10 a.m.	Constructing 2 free gravel roads.	John W. Weaver, County Auditor.
Indiana	Muncie	Dec. 9, 10 a.m.	Gravel roads, etc., 3 twps.; brick road Centre twp., all Del. Co.	Jos. E. Davis, County Auditor.
Indiana	La Fayette	Dec. 9, 10 a.m.	Constructing Bender gravel road in Wabash township.	John P. Foresman, County Auditor.
Indiana	Corydon	Dec. 9, 2 p.m.	Bldg. macadam road, Spencer, mac. or gravel, Jackson twp.	Frank E. Watson, County Auditor.
Indiana	Frankfort	Dec. 10, 2 p.m.	Bldg. 6 gravel roads, 67,609 ft. long.	Chas. F. Cromwell, County Auditor.
Ohio	Cincinnati	Dec. 11, noon	Improving Ritterhouse road, Miami twp., Spec. 799.	Stanley Struble, Pres. County Comrs.
Indiana	Mt. Vernon	Dec. 11, 2 p.m.	Grading and macadamizing 8 miles of 5 County roads.	Paul Maier, Co. Auditor.
Oklahoma	Purcell	Dec. 12	Brick paving.	R. L. McWillie, City Engineer.
Kansas	Fort Riley	Dec. 14, 10 a.m.	Macadam roads, curbing, grading, gutters, etc.	Capt. W. M. Whitman, Constr. Q.M.
Missouri	Kansas City	Dec. 14	Furn. mat., macadamizing and resurfacing 2 streets.	Frank M. Holcomb, County Auditor.
Wisconsin	Manitowoc	Dec. 15, 10 a.m.	Improving 24th St. bet. Wollmer St. and Western Ave.	John T. Hutson, Chm. St. Com.
Indiana	Anderson	Dec. 15	Grading, graveling, etc., 222,000 lin. ft. on 7 roads.	Wm. T. Richards, County Auditor.
Texas	Houston	Dec. 15, noon	Paving Richmond road.	John B. Ashe, County Auditor.
New Jersey	Newton	Dec. 17, noon	Grading and macadamizing 10 miles of road.	Loren C. Cole, Dir. Bd. Freeholders.
Texas	Fort Worth	Dec. 21, 3 p.m.	Repairing 14,921 sq. yds. asphalt pavement, 9 streets.	Sam Davidson, Supt. of Streets.
Minnesota	St. Paul	Dec. 21, 10 a.m.	Macadam or gravel on Bald Eagle Lake Ave.	Edw. G. Krahmer, County Aud.
Louisiana	Opelousas	Dec. 22, 4 p.m.	Bldg. 3,000 sq. ft. cement walk, 7,000 lin. ft. brick curb.	M. Halphen, Mayor.
Ohio	Cleveland	Dec. 23, 11 a.m.	Improving portion of Royalton road, Royalton twp.	A. B. Lea, County Surveyor.
Indiana	Anderson	Dec. 28	Bldg. gravel road 15,056 ft. along line of Hamilton Co.	Wm. T. Richards, County Auditor.
Kansas	Abilene	Jan. 1	Constructing 1 mile of concrete curb and gutter.	J. A. Graves, City Clerk.
WATER SUPPLY				
Michigan	Grand Rapids	Dec. 3	Furnishing 847 water meters for city.	S. A. Freshney, Gen. Mgr., B. P. W.
Massachusetts	Springfield	Dec. 4, 2 p.m.	Bldg. earth dam, Little River Water Supply, Contract No. 5, to contain 135,000 cu. yds. rolled embankment, 3 miles of roads, gate house, spillway, etc., cost, \$200,000.	E. E. Lochridge, Ch. Eng. Water Bd. City Clerk.
South Dakota	Murdo	Dec. 6	Pump sta., dis. system and 50,000-gal. steel tank and tower.	Capt. Willis C. Metcalf, U. S. Army
Rhode Island	Fort Getty	Dec. 7	Constructing water supply and sewer systems.	
New York	Amsterdam	Dec. 8, 8 p.m.	Hauling and delivering, also constructing c. i. pipe, etc., for Hanns Creek Conduit No. 2, inc. 3,538 tons 30-in.; 3,844 tons 24-in.; 16 1-2 tons smaller sizes, all straight piping; 25 tons 30-in.; 20 tons 24-in. specials; 16 tons 30-in. and 20 tons 24-in. inspection castings.	Chas. C. Yund, Pres. Water Bd.
Mississippi	Meridian	Dec. 8, 6 p.m.	Furn. and erect. 5,000,000-gal. hori. cross-compound crank and flywheel pump-engine; also bldg. rein. concrete reservoir.	C. C. Dunn, Pres. W. W. Com.
Washington	Spokane	Dec. 8	Constructing steel force main, almost 4 miles long.	J. T. O'Brien, Sec'y Bd. Pub. Wks.
New York	New York	Dec. 9, 2 p.m.	Furn. and laying water mains in 6 streets in Manhattan.	John H. O'Brien, Commr. W. S. G. & E.
Kentucky	West Covington	Dec. 10	Laying water mains along principal streets of town.	The Mayor.
California	Gridley	Dec. 14, noon	Furn. and erect. steel tank and tower for water works.	F. G. Moesch, City Clerk.
Minnesota	Eveleth	Dec. 15	Placing 300,000-gal. tank 110 ft. high, con. with city; \$30,000.	D. P. McIntyre, City Clerk.
Illinois	Colfax	Dec. 15	Constructing water works to cost \$12,000.	J. S. Barnes, Village Clerk.
Georgia	Fitzgerald	Dec. 15	Extension of water mains; \$25,000 available.	J. G. Knapp, Mayor.
Illinois	Herren	Dec. 15, 2 p.m.	Drilling and casing a deep well.	City Engineer.
North Dakota	Grand Forks	Dec. 15	Bldg. \$4,500 addition to settling basin; J. J. Smith, City Engr.	N. H. Alexander, City Auditor.
Kansas	Augusta	Dec. 20	Constructing water works.	Burns & McDonnell, Scarritt Bldg., Kansas City, Mo., Engineers.
Kansas	Hays	Dec. 20	Bldg. \$18,000 water works; R. B. Orr Eng. Co., K. C., Mo.	C. A. Harkness, City Clerk.
Oregon	Astoria	Dec. 21, noon	Bldg. 12,000 ft. 24-in. concrete and 13,000 ft. steel mains.	C. S. Wright, Chm. Water Com'n.
Florida	Daytona	Jan. 1	Constructing water works for city.	D. D. & C. M. Rogers, Engineers.
Florida	Palmetto	Jan. 1	Erecting w. w. tower, laying mains, etc.; \$15,000 voted.	E. F. Wilson, Mayor.
Indiana	Connorsville	Jan. 12, 7:30 p.m.	Constructing and leasing to city, additions and improvements to water works for 10 or 25 years; bond \$100,000.	Jacob S. Clouds City Clerk.

SEWERAGE

New York.	New York.	Dec.	2, 10 a.m.	Bldg. iron and tile trunk sewer and laterals, No. Brother Island.	Dr. Thos. Darlington, Pres. Bd. Hlth.
New York.	Brooklyn.	Dec.	2.	Furn. mat. and laying sewer E. 98th St., est. \$206,640.	Bird S. Coler, Boro. President.
Ohio.	Cambridge.	Dec.	3, noon.	Bldg. 1,000 ft. 8-in., 600 ft. 4-in. pipe sewers, etc.	O. M. Hoge, City Engineer.
Illinois.	Cerro Gordo.	Dec.	4.	Furn. laying, etc., 13,000 ft. 5 to 24-in. tile.	J. C. Locher, Town Clerk.
Ohio.	Dayton.	Dec.	4.	Bldg. 1,535 ft. 36-in. concrete sewer, 6-in. ring-faced invert and 980 ft. 24 in. and 12-in. vit. pipe storm sewer in Wyoming St.	W. A. Budroe, Clk. Bd. Pub. Serv.
Ohio.	Wooster.	Dec.	4, noon.	Bldg. sewer in South Buckeye St.	C. M. Van Nest, Clk. Bd. Pub. Serv.
California.	Los Angeles.	Dec.	7, 2 p.m.	Bldg. 30-in. brick or vit. pipe storm drain, etc.	C. G. Keyes, County Clerk.
Kentucky.	Franklin.	Dec.	7.	Constructing \$20,000 sewerage system.	C. E. Biggs, City Clerk.
Michigan.	Muskegon.	Dec.	7, noon.	Constructing sanitary sewers in certain sts., also drainage sewer.	B. H. Tellman, City Recorder.
Oklahoma.	Hobart.	Dec.	8, 8 p.m.	Furn. and laying 910 ft. 12-in., 1,900 ft. 10-in., 13,080 ft. 8-in. concrete or vit. pipe sewer, 31 manholes, 6 flush tanks.	O. E. Noble, City Engineer.
Pennsylvania.	Philadelphia.	Dec.	8.	Furn. according to Schedule B, branch sewers.	Geo. R. Stearns, Dir. Dept. P. W.
New York.	New Br't'n, S. I.	Dec.	8, noon.	Bldg. temp. combined and sanitary sewers, etc.	Geo. Cromwell, Boro. President.
Michigan.	Grand Rapids.	Dec.	10, 8 p.m.	Sewage pump mach., inc. four 40-in.; four 24-in., two 18-in. centrifugal pumps; four 175-h.p., two 75-h.p., two 60-h.p. and three 30-h.p. elec. motors; vacuum pumps, motors, etc.	Geo. C. Pierce, Pres. Bd. Pub. Wks.
Pennsylvania.	Danville.	Dec.	10.	Bldg. sewage disposal plant State Hosp. for Insane.	Supt. State Hosp. for Insane.
Kentucky.	Louisville.	Dec.	11.	Constructing 29th St. sewer; Contract 15.	P. L. Atherton, Chm. Sewer Com.
South Dakota.	Redfield.	Dec.	14, 8 p.m.	Bldg. main sewer of sanitary system from Holmes St. to term's.	H. T. Pasch, City Auditor.
Kansas.	Independence.	Dec.	15, 5 p.m.	Constructing main sewer; 3,620 ft. 18-in.; 3,745 ft. 15-in., 860 ft., 10 in. in 7 to 10-ft. trench; 473 cu. yds. rock excav., 75 cu. yds. concrete, 29 manholes.	J. D. Kramer, City Clerk.
Georgia.	Fitzgerald.	Dec.	15.	Constructing sewer system; \$75,000 available.	J. C. Anderson, Engineer.
Ontario.	Toronto.	Dec.	15, noon.	Bldg. Sec. 3, high level intercepting sewer, inc. 1,971 ft. 7 1-2-ft., 2,417 ft. 7 3-4-ft., 1,557 ft. 8-ft., 440 ft. 8 1-2 ft. circular sewer, manholes, connections, etc.	Joseph Oliver, Mayor.
California.	Agnew.	Dec.	16.	Bldg. sewer system at State Hospital.	W. N. Sontheimer, Sec'y Bd. Hosp. Managers.
Kentucky.	Louisville.	Dec.	18.	Bldg. Beargrass Interceptor, Sec. D, Contract 16.	J. B. F. Breed, Ch. Engr. Sew. Com.

BRIDGES

New York.	Rochester.	Dec.	3, noon.	Bldg. 2 lift bridges over Canal, Allen St. and Lyell Ave.	Fred'k Skene, State Eng'r. Albany.
South Carolina.	Spartanburg.	Dec.	3.	Bldg. steel or wood bridge over So. Tiger river.	S. M. Bagwell, County Clerk.
Wisconsin.	Milwaukee.	Dec.	4, 10:30 a.m.	Bldg. bascule bridge over Milwaukee river at E. Water St.	C. J. Poetsch, Chm. Bd. Pub. Wks.
Kansas.	Wichita.	Dec.	5.	Bldg. 80-ft. steel bridge, 16, two 80, 300 and 400-ft. pile bridge.	County Clerk.
Mississippi.	Gulfport.	Dec.	7.	Bldg. new bridge over Hurricane Creek, Amey and Ramsy road.	Harrison County Com'rs.
Indiana.	Valparaiso.	Dec.	7.	Bldg. 40-ft. span on concrete, 60, 100 and two 90 ft. on tubes.	G. F. Stinchfield, County Aud.
Missouri.	Kansas City.	Dec.	7, noon.	Bldg. steel super, and concrete footings, Main St. viad.	Commercial Imp. Co., Dwight Bldg.
Kansas.	Kansas City.	Dec.	7.	Bldg. rein. concrete culvert on Mastin road.	County Commissioners.
California.	Los Angeles.	Dec.	7, 2 p.m.	Bldg. rein. concrete bridge over Wash on White Oak Ave.	C. G. Keyes, Clk. Co. Superv.
Mississippi.	Greenwood.	Dec.	7.	Bldg. pile bridge 150 ft. long, opening in level, etc.	C. W. Crockett, Clk. Co. Superv.
Oklahoma.	Kingfisher.	Dec.	7.	Bldg. steel bridge over Cimarron river.	Geo. H. Woodworth, County Clerk.
Mississippi.	Grenada.	Dec.	7.	Bldg. iron bridge over Bogue Creek at Tie Plant.	County Commissioners.
Mississippi.	Vicksburg.	Dec.	7.	Building 4 bridges.	J. D. Laughlin, Chancery Clerk.
Minnesota.	Crookston.	Dec.	7, 10 a.m.	Bldg. steel bridge over Red Lake River, 212 1-2 ft. long, 20 ft. rdwy. and two 6 ft. walks, rein. concrete abut. and wings; also 3 alternate bids.	J. E. Carroll, City Engineer.
Oklahoma.	Pawhuska.	Dec.	8, 5 p.m.	Bldg. 7 steel, 1 concrete and 1 stone arch bridge.	H. J. Behning, County Auditor.
Indiana.	Princeton.	Dec.	8, 11 a.m.	Constructing 33 bridges for County.	Gibson County Commissioners.
Indiana.	Paoli.	Dec.	8, 2 p.m.	Bldg. 24-ft. span steel leg bridge and 18-ft. retaining wall.	Alvin B. Ham, County Auditor.
New York.	Mamaroneck.	Dec.	9, 8:30 p.m.	Bldg. 35-ft. rein. concrete arch bridge, 50 ft. wide, etc.	C. W. Buckner, Clk. Vil. Trus.
Georgia.	Covington.	Dec.	10.	Bldg. 2 steel bridges over South River.	J. Z. Johnson, Chm. Co. Comrs.
Illinois.	Geneseo.	Dec.	11.	Constructing 28 culverts with head walls.	H. E. Reeves, Atkinson, Engr.
Wisconsin.	Green Bay.	Dec.	14, 2 p.m.	Bldg. bridge over Fox River at Walnut St., inc. four 140-ft. spans and 114-ft. bascule span, cost \$150,000.	W. W. Reed, City Engineer.
Ohio.	Columbus.	Dec.	16, noon.	Bldg. \$20,000 masonry approaches and sub-str. of viaduct, Mound St.; also \$100,000 steel superstructure for viaduct.	E. W. Hirsch, Sec'y Bd. Pub. Serv.
Ohio.	Cincinnati.	Dec.	18, noon.	Bldg. steel girder bridge over No. Br. Sycamore Crk., Symmes twp.	Fred Dreih, Clk. Co. Com'rs.
Washington.	Sumner.	Dec.	24, 11 a.m.	Bldg. 180-ft. steel and iron through span, resting on cylinder piers with 200 also 20-ft. approach, etc.	Pierce County Com'rs.
Nebraska.	Fairbury.	Jan.	1.	Yearly bridge contract for Jefferson County.	F. A. Houston, County Clerk.
Indiana.	Rensselaer.	Jan.	12.	Constructing bridge over Kanku River.	J. H. Leatherman, County Aud.

LIGHTING AND ELECTRICITY

New York.	New York.	Dec.	2, 2:30 p.m.	Complete electric light and power system for Bikwl's Isl.	Robt. W. Heberd, Com'r Charities.
New York.	New York.	Dec.	7.	Furn. gas lamps, etc., gas, naphtha and elec. for lamps, for lighting streets, etc., various boros.; also 600 gas regulators and steam for heating or power in pub. bldgs.; also 182 in Brooklyn.	John H. O'Brien, Com'r W. S. G. & E.
New York.	New York.	Dec.	7.	Furn., etc., 3,250-k.w. 3-phase, 6,600-volt, 25-cycle electric power for high-pressure fire service, 2 stations in Manhattan during 1909; also 1,830 k.w., 3-phase, 6,600-volt, 25-cycle power, Brooklyn.	John H. O'Brien, Com.W.S.G. & E.
Pennsylvania.	Philadelphia.	Dec.	8.	Furn. ornam. lamp posts for Walnut Lane bridge.	Geo. R. Stearns, Dir. D. P. W.
Pennsylvania.	Erie.	Dec.	10, noon.	Furn. and install. 2 steam engines and piping, 2 electrical generators and switchboard; also wiring bldgs. and grounds of Erie Co. Almshouse in Millcreek twp., Erie Co.	Fred. C. Momeyer, Sec'y Dirs. Poor.
Indiana.	Goshen.	Dec.	10, 9:30 a.m.	Install. \$725 acetylene plant at Co. Infirmary at Dunlaps.	D. O. Batchelor, County Aud.
Ohio.	Dayton.	Dec.	10.	125 h.p. recip. engine, 75 h.p. turbine engine, dir. con. to generator, same h.p., switchboard, etc., complete installed.	W. H. Bussard, Clk. Bd. Educ'n.
Tennessee.	Memphis.	Dec.	10, noon.	Furn. gas and gasoline lights for 1909, all and every night.	Ennis M. Douglass, City Register.
California.	Napa.	Dec.	15.	Sale of electric light franchise: E. D. N. Lehe, Dixon, applicant.	N. W. Collins, County Clerk.
Oregon.	Eugene.	Dec.	15.	Bldg. \$130,000 power plant, F. C. Kelsey, Portland, Engr.	J. D. Matlock, Mayor.
Missouri.	Jefferson Bar'cks.	Dec.	22, 11 a.m.	Bldg. elec. light system, inc. pole lines, wiring bldgs., fixtures, transformers, etc.; also to furn. current.	Capt. O. W. Bell, O.M., U. S. A.
Connecticut.	Hartford.	Jan.	4, 11 a.m.	Lighting streets for 1 or 5 years from June 1, 1909.	Jas. P. Berry, Sec'y Bd. C. & S.
Texas.	Fort Worth.	Jan.	15.	Furn. arc and other lights for city.	Lee Stephens, Com'r of Lights.

MISCELLANEOUS

New York.	New York.	Dec.	2, 10:30 a.m.	Furn. 10 top buggies for Manh. and 10 for Brooklyn Fire Dept.	Nicholas J. Hayes, Fire Com'r.
New York.	New York.	Dec.	3.	Bldg. foundations of municipal bldg., est. \$950,000.	J. W. Stevenson, Com'r Bridges.
New York.	New York.	Dec.	3.	Bldg. 40 metal storage cabinets for Am. Mus. Natl. Hist.	Henry Smith, Pres. Park Board.
Virginia.	Richmond.	Dec.	3, 6 p.m.	Constructing market and armory building.	H. P. Beck, Bldg. Insp'r.
Texas.	Dallas.	Dec.	4.	Scavenger work for 1909, inc. teams, collecting, etc.	S. J. Hay, Mayor.
New York.	Niagara Falls.	Dec.	4, 10:30 a.m.	Bldg. complete, inc. plumbing, electric heating and lighting for shaft and tunnel and inclined foot path; bond, \$50,000; also elevators, inc. machinery, etc., bond, \$10,000.	E. H. Perry, Supt. State Reservation.
Ohio.	Dayton.	Dec.	5.	Extending Riverdale dam and repairing old dam, inc. 495 lin. ft. AA or BB, dam and levee abutments, 400 lin. ft. concrete and boulder or concrete cube filling.	W. A. Budroe, Clk. Bd. Pub. Service.
North Carolina.	Clinton.	Dec.	7.	Bldg. dam across Little Coharie river, 300 ft. long, 3 1-2 ft. high, at least 6-in. above high water mark when settled, 24 ft. in bed, and 18 ft. at top, ditches 2 ft. on each side.	A. J. Johnson, Chm. Co. Comrs.
North Dakota.	Grand Forks.	Dec.	7, 4 p.m.	Furnishing 1,000 ft. 2 1-2 in. single jacket cotton fire hose.	John D. Taylor, Mayor.
Indiana.	Paoli.	Dec.	8, 2 p.m.	Bldg. 24-ft. span steel by-bridge and concrete retain. wall, 18 ft. long.	Alvin B. Ham, County Auditor.
New York.	North Tonowanda.	Dec.	9, 8 p.m.	Furnishing 2,000 ft. of fire hose.	Herman B. Sommer, City Clerk.
Texas.	Tulia.	Dec.	15.	Bldg. 3-story and base brick and stone Court House.	W. B. Hale, County Judge.
Massachusetts.	Fort Strong.	Dec.	17.	Bldg. garbage crematory; also building.	Capt. R. H. Wolfe, Q. M., U. S. A.
Texas.	Fort Worth.	Dec.	21, 3 p.m.	Collection of garbage for city.	W. D. Harris, Mayor.
Oregon.	Portland.	Jan.	15.	Furn. 25,000 bls. Portland cement, f.o.b. at works.	U. S. Reclamation Service.

STREET IMPROVEMENTS

Anniston, Ala.—The city is considering \$5,000 bond issue for improving Oxford and Cemetery roads. —Thomas Kilby, Mayor.

Montgomery, Ala.—Council has passed substitute ordinances for the following streets to allow contractors to bid on Blome Patent Granotoid pavement; Moulton, from north side of Clayton to north side of Bibb, and Jeff Davis avenue from Goode street to east side of Cleveland avenue; Amanda street substitute ordinance from south side of Mildred to north side of Jeff Davis avenue has been indefinitely postponed.

Union Springs, Ala.—Bullock county has authorized \$100,000 bond issue for road-building purposes. —Address Judge of Probate.

Oroville, Cal.—A petition has been presented to the Board of Supervisors praying that the Palermo road at the site of the Western Pacific terminal and shops be changed; petition will be granted, as the change will not cost the county much and the road will be improved.

Pasadena, Cal.—Council has ordered the improvement of Morton and El Molino avenues; also grading of Dayton street. —Heman Dyer, City Clerk.

Pensacola, Fla.—City Engineer Thornton has furnished an approximate estimate of the cost of relaying the pavement on Palfox street, from Main to Garden streets, and recommended that if the pavement is relaid that a concrete base be laid for the pavement, and figured the approximate cost of the work of relaying the pavement at \$16,205.48, divided as follows: Pensacola Electric Light Company's portion, \$2,959.16; abutting property owners, \$8,830.88; city's portion, \$4,415.44; communication has been referred to the Council without recommendation from the Board.

San Leandro, Cal.—Town Trustees have received petitions from the property owners along East Fourteenth street through this place and from the local Board of Trade asking that the street be widened at least 15 feet.

Jacksonville, Fla.—Street Committee has inserted the following paving items in their report: Myrtle avenue, Adams street to King's road, \$6,406.09; Clay street, Forsyth to Ashley, \$1,594.40; Ward street, Clay to Bridge, \$423.32; Florida avenue, Jessie street to Darwin, \$1,932.19; Beaver street, Main to Newman streets, \$1,231.16; Osceola street, Riverside to Park, \$1,735.45; Walnut street, First to Eighth, \$4,885.95; Laura street, Fourth to Eighth, \$4,003.37.

Douglas, Ga.—An election will be held December 8 to vote on the question of issuing \$100,000 5 per cent 30-year road improvement bonds. —Dan Lott, Chairman of the Board of County Commissioners.

Buda, Ill.—Bonds, \$10,000, have been authorized for the construction of cement walks. —Address City Clerk.

Casey, Ill.—City will lay about one mile of brick pavement.

East St. Louis, Ill.—City Engineer W. J. Crocker has prepared plans for brick paving, on concrete foundation, on Fourteenth street from Pennsylvania to St. Clair avenue, and in alley south of Broadway, from Main to Fourth street. —Address Secretary Board of Local Improvements.

Joliet, Ill.—Mayor Cronin, with the Board of Improvements, is securing data about paving that the best may be used in the city next year; asphalt is unsatisfactory.

Normal, Ill.—City is planning another large brick pavement improvement on Broadway. —James Melnish, Bloomington, Ill., Engineer.

Peoria, Ill.—Adams street will be repaired from Hamilton to Oak streets.

Hartford City, Ind.—Commissioners will approve the paving of the East Water street pike as far as the I. O. O. F. cemetery; bonds will be sold and the road will be built next spring.

Indianapolis, Ind.—Board of Public Works has received a resolution giving the county the right to pave or drain North Meridian street, from Forty-sixth street north, if the county should desire to do so; also petition for paving of Thirtieth street, from Northwestern avenue to the canal; a resolution for opening Beecher street from East street to Madison avenue has been confirmed.

Indianapolis, Ind.—The Board of Works has ordered improvements on Gladstone avenue, from Washington street to Michigan street with asphalt roadway, curbing and brick gutters.

Vincennes, Ind.—The petition of Emison and Baker, asking permission to regrade Emison avenue in the Baker and Emison addition has been granted; petitioners are to do the work at their own expense.

Williamsport, Ind.—Bids will be received for constructing a gravel road in Steuben Township, and one in Liberty Township. —R. L. Wink, County Auditor.

Des Moines, Ia.—The Street Paving Committee has under consideration the

paving of many streets during the coming year. —John McVicar, Commissioner of Streets.

Kansas City, Kan.—The Board of Park Commissioners is receiving bids for bonds to cover the cost of building Washington boulevard from Third to Eighth streets; general bonds, at par, to pay for filling the eight acres of low land north of Minnesota avenue and east of Eleventh street were sold to Spitzer & Co., of Toledo, O., for \$54,000; it was the Board's first bond issue.

Salina, Kan.—City is contemplating two miles of brick street paving. —Amos Godfrey, City Clerk.

Louisville, Ky.—The Crescent Hill Improvement Club is urging improvement of streets and general conditions in Crescent Hill.

Shreveport, La.—Mayor A. S. Dickson has recommended issuance of bonds for additional paving; also advocated municipal ownership of water and light plants.

Baltimore, Md.—A petition asking for the paving of Wilkens avenue, from Gilmore street to Catherine street has been sent to Mayor Mahool and forwarded to the Commissioners for Opening Streets; property owners want sheet asphalt laid on the upper end of the avenue, but the Commissioners say that the work could not be paid for out of the Annex loan; they also declare that it would take \$10,000,000 to properly pave the Annex alone.

Grand Rapids, Mich.—Council has ordered the Board of Public Works to furnish an estimate for resurfacing East Fulton street and macadamizing North College avenue.

Boston, Mass.—Aldermen have voted to table a special legislative act providing for passage of a loan of \$70,000 outside of the debt limit to improve Hyde Park avenue, and action was assigned for one week on a substitute order providing for a loan of the same amount but inside the debt limit.

Lawrence, Mass.—City Engineer's Department has prepared estimate of the cost of granite block paving Milton street, South Broadway, South Union street, Haverhill street, Prospect street, Hampshire street, Lawrence street, Elm street, Short street, Newbury street and Water street, in certain sections; 61,020 square feet of paving will be required on Prospect street; 73,950 square feet on Newbury, 125,400 square feet on Lawrence, 74,188 square feet on Hampshire, 6,800 on Pine, 72,000 on Elm and 17,080 square feet on Short street.

Carthage, Mo.—F. B. Newton, City Engineer, has figured out practically the exact cost of the work of paving the streets around the public square portions and of the streets leading up to the square will take 690,000 large paving blocks; these blocks will be of the best make and are used in Kansas City and the larger cities; cost of the brick, cement, asphalt filler and all materials used will come to a total of \$12,500; this includes tools and all implements used; in doing this work the contractor will employ all the way from 20 to 50 men, it depending a good deal on the weather conditions whether the force will be large or small; cost of paid labor will amount to about \$13,000; total cost of material, tools and the hard wear on them and some other incidentals, will bring the total amount up to \$27,700.

Allegan, Mich.—City is securing figures on the cost of paving Locust and River streets with brick; work will probably be started in the spring.

Clayton, Mo.—The Grand Jury, which adjourned recently, in its report to Judge John W. McElhinney has recommended bond issue to cover the cost of maintenance of roads and bridges.

Kansas City, Mo.—Citizens will vote on an annual fund of more than \$400,000 for Jackson county roads, in addition to the regular dramshop money, amounting to more than \$200,000.

Springfield, Mo.—Council will advertise for bids for paving Market street. —G. W. Hackney, City Clerk.

Reno, Nev.—Assemblymen of Washoe County will endeavor to have the Assemblymen of Ormsby County join with them in having a bill passed providing for the bonding of Washoe and Ormsby counties for the improvement of roads in the two counties.

Bayonne, N. J.—Council has passed an ordinance altering the grade of West 10th street, from Avenue A to the Boulevard. —P. P. Garven.

Jersey City, N. J.—The West Side Improvement Association is urging the widening of West Side avenue from Communipaw avenue to Culver avenue; Board of Trade has adopted resolutions that the city be asked to repave York street from the river front to Barrow street with an 8-inch base and specification blocks; also improving of Exchange place.

Plainfield, N. J.—The Somerset County

Board of Freeholders has decided on complete macadamizing of the Greenbrook road; when State Road Commissioners add their approval bids will be advertised; work will cost about \$8,000.

Argyle, N. Y.—The Washington County Board of Supervisors has adopted a resolution for construction of a State road from Sandy Hill to Ft. Ann, a distance of 7.21 miles; cost, \$80,400; also a road from Smiths Basin to Hartford; distance, 5.26 miles; cost, \$50,800.

Brooklyn, N. Y.—Plans are being made by the Borough of Queens engineers for the widening of Jamaica avenue through Richmond Hill.

Buffalo, N. Y.—The Board of Public Works has received recommendation from F. G. Ward for following improvements: Laying hard material walks, east side Mississippi, between Elk and Perry; west side Mississippi, between Elk and Perry; east side Columbia, between Elk and Perry; west side Indiana, between Ohio and 253 feet north; east side Indiana, between Mary and 240 feet south; east side Mississippi, between Scott and 250 feet south; east side Burwell, between 121 feet south of Scott and 40 feet south; west side Peoria, between Garfield and 42 feet north; north side Grote, between Bridgeman and 260 feet east; south side Ontario, between Niagara and Tonawanda; south side Walden, 750 feet east of Wex and 90 feet east; south side Walden, 1,290 feet east of Wex and 90 feet east; south side Walden, 1,605 feet east of Wex and 30 feet east; south side Walden, 71.14 feet east Wood and 71.14 feet east; south side Walden, between Brinkman and 40.44 feet east; and to relay stone, north side Bryant, between Richmond and 196 feet east; north side Bryant, between 78.41 feet west, Ashland, and 65 feet west; and to relay concrete, east side Oak, between 216 feet north Genesee and 59 feet north; and to relay plank, east side Nurwell, between Perry and 270 feet north; and to lay plank, south side Lang, between 205 feet east Bailey and 30 feet east; north side Hedley, between 417.15 feet east Jefferson about 160 feet east; north side Perry, west corner Erie Railroad lands; and to grade between curb and property line, west side South Park, between 335.19 feet south Pixley and 307.17 feet south; all have been referred to the Committee on Side and Crosswalks.

Caldwell, N. Y.—The Board of Supervisors of Warren County has decided to construct a State road from Lake George to Luzerne; \$127,000.

Troy, N. Y.—Brunswick has been authorized to raise \$1,400 for highway purposes; \$635 for road machines and bridges; Sand Lake, \$1,520 for highway purposes and \$295 for roads and bridges; Stephentown, \$1,600 for highway purposes and \$634 for roads and bridges. Poestenkill has adopted a resolution providing \$500 for bridges in the town; Berlin, a resolution appropriating \$1,600 for highway purposes in the town, and \$1,213 for bridges and repairs; Schodack, a resolution for the expenditure of \$3,985.85 for highway purposes and another for the expenditure of \$1,450 for bridges and repairs; East Greenbush, a resolution which was adopted, fixing \$1,200 as the amount to be raised in that town for highway purposes and \$159 for bridges and repairs; Hoosick, a resolution authorizing the Town Board to raise \$22,597.90 for various purposes.

Troy, N. Y.—Council has ordered a sidewalk laid on People avenue, from Ninth street to Burdett avenue; also received an ordinance, which was referred to Committee, providing for the paving of King street, from Bridge avenue to Jacob street.

Utica, N. Y.—Councilman Potter presented a resolution, adopted, to issue bonds to pay for State roads, saying that it was in place of one adopted at the special session in June, which was found defective; bonds are to raise \$100,000, and the proceeds are to be used in paying for the Rome-Taberg road, No. 563, the Rome and Northwestern road, Nos. 561 and 562, and the Utica and Bridgewater road, No. 559.

Warsaw, N. Y.—Department at Albany has received resolution for the building of about fifty miles of state road in Wyoming county.

Akron, O.—Council has passed a \$3,000 bond ordinance, which is to be used to pay for the improvement of a number of streets in the city; part of the money will be used to pay the cost of completing the Cuyahoga street retaining wall, and some for the construction of the Case avenue sewer; also referred an ordinance providing for \$14,800 bond issue for street improvements to the Finance Committee; sums ranging in size from \$200 to several thousand dollars have been provided for in the ordinance for the improvement of a number of streets and for the construction of a trunk sewer; improvements to be made on Marvin avenue, Mayfield avenue, Ira avenue, Bittman street, and sev-

eral others; the ordinance has been referred to the Finance Committee.

Ashtabula, O.—Plans and specifications are being prepared for grading and draining Fern and Middle streets.—A. J. Richardson, Clerk Board of Public Service; L. A. Amsden, City Clerk.

Bucyrus, O.—Council has received a petition asking for the paving of Poplar street, from Marion street to Mary street; referred to the City Engineer, Mr. Neiderhiser, in order to allow him to investigate the number of front feet represented and report to the Council; seven petitioners have asked that new sidewalks be constructed in front of fourteen designated properties on Wingert street; City Engineer will report on the necessity for walks there and to have solicitor Kennedy prepare the resolutions.

Dayton, O.—City Auditor Philipps has sent the city bonds for the Salem avenue and Ludlow street paving, amounting to \$12,500 and \$8,300, respectively, to the highest bidders, Hayden, Miller and Co., of Cleveland, and money for the bonds is expected shortly.

East Liverpool, O.—Council has placed on second reading the ordinance for the improvement of Apple alley, from East Fourth street south to the northerly rail of the C. & P. Railroad, by grading and curbing.

Hamilton, O.—Council has passed resolutions for improvement of North E street, Mason avenue, Court street alley and Rhea avenue.

Hamilton, O.—Council has passed ordinances determining to proceed with the improvement of Wayne avenue from B to D street by the construction of a storm water sewer therein; the City Civil Engineer has submitted plans, specifications and estimates for paving Market street from Fourth street to Monument avenue with sheet asphalt, vitrified brick or bitulithic or bituminous macadam; estimates of cost were on all materials, with stone curb and gutter, \$19,371; combined curb and gutter, \$18,769.

Steubenville, O.—Council has passed under suspension rules ordinance accepting a grant for street and alley purposes from the Steubenville Coal and Mining Company; ordinance to improve certain streets and alleys on Pleasant Heights addition.

Oklahoma City, Okla.—City Attorney W. R. Taylor has prepared an ordinance which calls for the paving with asphalt Harrison avenue from Fourth street to Stiles Circle Park, four blocks in distance.

Sulphur, Okla.—Three new paving districts have been created and bids will be asked before paving in first district can be completed; Shelby-Downard Asphalt Company got the contract for the first district with a bid of \$24,000.

Portland, Ore.—Council has received resolution for new paving district in north Poland; resolution calls for the improvement of the streets with vitrified brick pavement.

Beaver Falls, Pa.—Clerk of Council has been ordered to advertise for bids for paving Sixth street from Seventh to Ninth avenue.

Butler, Pa.—Council has received petitions from property holders on West D street, who desire something to be done to their street, as well as giving them a grade for sidewalks.

Irwin, Pa.—Members of the Immaculate Conception Church are circulating a petition among property owners with a view of having the eastern end of Second street paved; petition will be presented to Council for consideration.

Parkerford, Pa.—Surveyors are at work on the roads around Parkerford; between that place and Phoenixville will be made into a state highway.

Philadelphia, Pa.—Council has passed ordinance for paving of Union street, from Haverford to Ogden street, and Berks street, from Franklin avenue to Blair street, and work incident thereto.—J. E. Reyburn, Mayor.

Sharon, Pa.—City Council has received ordinances for the opening of two new streets in the borough, one of which is the new State line boulevard, which after months of work has reached the point where its successful opening is assured; the other is the new 40-foot wide street, between Grant and Russell streets, in the northwestern part of the city; purchase of a site for the erection of a new tool house is being considered.

Titusville, Pa.—Citizens have voted \$51,000 bonds; result means that about \$100,000 will be expended on paving four streets, also the building of four concrete bridges.—Herbert A. Holstein, City Engineer.

Providence, R. I.—Council has adopted resolutions to define grade of Moorfield and Stadden streets and Rounds avenue; order to curb Hammond street; permitting extension of area of Hebrew Burial Ground on Reservoir avenue.

Bristol, Tenn.—The work on streets will

be continued next year and will have for its object the grading and macadamizing of all thoroughfares leading into the city; improvement for next year, which will be taken up early in the spring, will include West State street from the Little Creek bridge to the corporation line; Norfolk avenue from Williams street to the corporation line, and Buchanan street from Railroad street to the corporation line.

Greeneville, Tenn.—Greene County Road Commissioners have recommended that \$150,000 be procured for road improvements additional to \$150,000 already expended.

Lonsdale (Station Knoxville) Tenn.—City will vote December 5 on issuance of about \$150,000 of bonds to improve streets, construct water works.

Fort Worth, Tex.—Hemphill street will be paved; bitulithic paving will be used, because the paved section of the street already has the bitulithic and it seems to be giving satisfaction; question has not finally been determined, and other material may be used; work of putting down the paving will begin on Bowie street and work will proceed in both directions, south to the Bolt works and north to Jessamine street.

Texarkana, Texas.—An election will be held December 12 on issue of \$135,000 bonds for improving streets.

Norfolk, Va.—The Road Committee of the Port Norfolk and Pinners Point's newly created Civic League will appear before the Supervisors and urge road improvements in the two communities.

Norfolk, Va.—The Public Improvement Committee of the City Council has recommended that \$22,755 be appropriated for the purpose of paving Chapel street, between Wood street and Princess Anne avenue; also recommended that \$5,000 be appropriated for systematic improvements to the streets in Brambleton Ward; approved a resolution providing for an appropriation of \$50 for laying a sidewalk around the Norfolk Mission College, Princess Anne avenue; recommended that Armistead Bridge road and Langley street be improved and the Committee adopted a resolution appropriating \$4,500 for this purpose; Committee has asked the City Engineer to make an estimate as to the cost of curbing Wide and Newton streets; also referred to Board of Control question of extending Twelfth street into Princess Anne avenue and paving the extension with asphalt; the City Engineer has estimated that it will cost \$43,593.50 to pave Omohudro avenue and lay the necessary water and sewer pipes, gutters and curbing; to extend and pave Twelfth street as suggested, Engineer Brooke says it will cost \$43,287; question of the asphalt plant will come before the committee at next meeting.

Seattle, Wash.—Council has received a petition for the opening of additional streets to the southern boundary of the city.

Seattle, Wash.—On motion of Councilman F. H. Hurd, Council has referred bill authorizing the Metropolitan Building Company to pave, lay sidewalks and put in sewer and water mains on Fourth avenue between Seneca and Union streets, ordered planing and grading on various streets, and adopted resolution for paving East Denny way and others; paving Spruce street and others, and plank roadway on Second avenue west.

Seattle, Wash.—The opening of First avenue south from its present terminus at Spokane avenue to Georgetown and thence through Georgetown to South Park, a project which residents of the Duwamish Valley have been pushing for several years, seems now to be assured; Assistant Corporation Counsel King Dykeman has announced that he will file in the Superior Court a stipulation by which the Puget Sound Electric Company agrees to accept \$11,550 as its part of the damages; a settlement has already been reached with all the property owners affected at a cost of \$100,000; the Puget Sound Electric Railway will be obliged, besides donating some land, to rebuild its trestle to a different level, and the cost will be considerable; it has been provided in the franchise for the Union Pacific Railroad, passed by the Georgetown Council two weeks ago, that the railroad begin at once the construction of a trestle half a mile long on First avenue south in the Seattle limits.

Tacoma, Wash.—Council Committee on Streets and Alleys has denied remonstrance against the grading of North Seventh street from Warner to Proctor, North Eighth street from Union avenue to Glendale addition, Puget Sound avenue from Sixth avenue to North Eighth street and Union avenue from Sixth to North Ninth, all in District No. 655, but will modify the plans.

Wenatchee, Wash.—Council has decided that the proposition should be submitted to the voters to bond for \$30,000 for municipal improvements both general and special; this done, the city will carry on the work

of regrading Wenatchee and Chelan avenues.

Grafton, W. Va.—With the site for the new Federal building determined and the probability of Congress passing the bill appropriating the amount necessary to its construction at its next session, agitation has been begun looking to the widening of Latrobe street from the Court House down to the point where the new public building will be constructed.

Madison, Wis.—Specifications are being prepared for improving Washington avenue by paving.—Address City Clerk.

Puebla, Mex.—Within a very short time the leading streets of this city will be asphalt paved; work will begin just as soon as the water mains are laid.

SEWERAGE

Jasper, Ala.—City is contemplating construction of a sewer system to cost about \$8,000; J. R. Smith, City Engineer, is making surveys and securing estimates.

Mobile, Ala.—Council has received petition of Mobile Electric Company asking for a franchise for a pipe line and sewer from the plant of the company at St. Louis and Royal streets to the river; also to erect and maintain a pumphouse at the foot of St. Anthony street.—Address Alderman F. J. Inge.

Coaling, Cal.—M. L. Weaver, City Engineer of Visalia, is preparing plans for a sanitary sewer system for this city to be of vitrified pipe and to total 51,000 feet; bond election will be called immediately.

Colfax, Cal.—City has secured water supply and will now take steps to install a sewer system.

Pasadena, Cal.—Council has ordered sewers constructed in Colorado avenue, Meredith avenue, Bonnie avenue, Modena avenue, Marion avenue, Harkness avenue, Hill avenue, Holliston avenue, Chester avenue, Michigan avenue, Stevenson avenue, Wilson avenue and Catalina avenue; also on El Molino avenue, Fillmore street, Madison avenue, Oakland avenue, Miles street, Madison avenue, Galena avenue, Buckeye street, Mountain street, Herbert street, Thompson drive and Jackson street.—Herman Dyer, City Clerk.

Flakely, Ga.—Citizens will vote on \$25,000 issue of sewer bonds.—M. T. Chipstead, Mayor.

Marietta, Ga.—City has voted \$80,000 water bonds and \$30,000 sewer bonds.

Aledo, Ill.—The Board of Local Improvements has rejected all bids for the construction of a sewerage system and will re-advertise for bids.—Jos. W. McRoberts, Secretary; W. S. Shields, Engineer, Chicago.

Hegewisch (Sta. Chicago), Ill.—Village ordinance has been passed by Board for installation of a complete sewer system.

Lincoln, Ill.—Council has passed an ordinance providing for a vitrified sewer in Hamilton street, from Delavan street to Denver avenue.

Mendota, Ill.—Sewers have been ordered in Monroe street, west from Indiana avenue.

Goshen, Ind.—Goshen citizens are discussing a new sewer system, the city having outgrown its present system.

Cascade, Ia.—Paine & Howard, of Algona, are preparing plans for a sewerage system.

Glenwood, Ia.—Bids will be received December 4 for the purchase of \$30,000 6 per cent. Pony Creek drainage bonds.—W. H. Fickel, County Treasurer.

Traer, Ia.—A movement is under way looking to the construction of a sewerage system.

Opelousas, La.—City is contemplating voting on bond issue for sewerage and street paving; C. F. S. Early, Engineer, will prepare plans.—C. F. Bailey, City Clerk.

Cumberland, Md.—Council has ordered that sewers be placed as designated by the City Engineer to take care of the water over the B. & O. R. R. along the Queen City pavement, at a cost not to exceed \$2,000.

New Bedford, Mass.—A petition for the extension of main distribution pipe on Collins street, from present terminus 243 feet east of Cedar street, east 104 feet, was granted by the Water Board; also for Lexington street from Rockdale avenue west 454 feet, and for David street, from present terminus 77 feet east of Salisbury street, east 48 feet, signed by Maxine Cadorette.—L. R. Washburn, President Pro Tem.

Detroit, Mich.—Council has directed the Department of Public Works to advertise for proposals for the construction of six vitrified crock lateral sewers.—J. J. Haarer, Commissioner, City Hall.

St. Peter, Minn.—City will clean out and brick in about 1,200 feet of old sewer; also construct about 750 feet of 15-inch tile sewer with catch basins, etc.—H. A. Hildebrandt, Supt. of Sewers.

Ypsilanti, Mich.—Council has allowed a

sewer on Washington street to Florence, as far as the west line of James Kelso's property; also a sewer from the intersection of Cross street and Oakwood boulevard west to Wallace boulevard and south to the premises of G. Barton, and defeated proposed sewer on Huron, south, running in and along Bell street to a point opposite the premises of William F. Blanchard.

Duluth, Minn.—Nine sewer contracts, most of them small ones, will be started and finished in Duluth before the end of the year; total expenditure of about \$12,000. The largest sewer will run from Sixty-first to Sixty-third avenues east on Superior street, with an outlet to the lake; total length 2,200 feet; cost will be \$3,657.

Red Wing, Minn.—Specifications are being prepared for constructing sewers; estimated cost, \$30,000.

Willmar, Minn.—Specifications will be prepared for septic sewer system.

Winona, Minn.—Estimates will be prepared for sewers in the Third District; \$50,000 will be expended.

Cartersville, Mo.—City expects to extend sewer system and install a water system. L. M. James, Mayor, A. W. Canada, City Engineer.

St. Joseph, Mo.—The Board of Public Works has decided to expend \$5,000 for sewer for Charles street.—Address City Clerk.

Camden, N. J.—An order of the State Board of Health notifying this city that it must install a sewage disposal plant by September 1, 1913, will involve the expenditure of a large sum of money and force the issuance of bonds for the amount.

Jersey City, N. J.—The Board of Trade's Committee on County Affairs has prepared a recommendation in line with that of the Passaic Valley Sewerage Commission's plan that a big tunnel be run down the valley to carry off the sewage, that screens be placed in the tunnel to intercept solid sewage which should be disposed of by running it out to sea in scows, permitting the fluid sewage to continue in the tunnel to a point beyond Robbin's Reef in New York Bay.

Batavia, N. Y.—Consulting Engineers Albert L. Webster and Rudolph Hering, New York City, have completed report covering disposal of sewage of the village of Batavia and have recommended the construction of a complete system of sewers and sewage disposal plant, at an estimated cost of \$367,000; bond issue will be referred to taxpayers. K. B. Mathes, Geo. A. Farrall, C. H. Honeck, Andrew M. Clough, H. H. Chapin and Myron H. Peck, Chairman, compose Sewer Board.

Brooklyn, N. Y.—The Board of Estimate and Apportionment has granted \$6,000 for the building of a pumping station at the dead end of the Myrtle avenue sewer in Ridgewood, which was built up to the Brooklyn line and is now awaiting the completion of the new main being built through St. Nicholas avenue, Brooklyn, as an outlet.

Niagara Falls, N. Y.—The Board of Estimate and Apportionment has authorized City Clerk Horne to advertise for bids for the sale of \$75,000 sewer bonds; money to be used in extending the tunnel trunk sewer on the east side.

Niagara Falls, N. Y.—The Board of Estimate and Apportionment has authorized City Clerk to advertise for bids on \$70,500 worth of sewer bonds which will be used in building an extension of the tunnel trunk sewer on the east side.

Watertown, N. Y.—City Engineer Henry E. Baker is completing plans for a sewer system for the Third and Fourth Wards of city; cost, \$80,000; bids will soon be called for by the Board of Public Works.

Waverly, N. Y.—President C. H. Lawrence and Trustee Ross have reported regarding their recent trip to inspect sewage disposal plants, particularly with respect to the feasibility and advisability of Waverly's adopting the plans submitted by Williams, Proctor & Potts for sewer system and disposal plants; President Lawrence has been authorized to employ a competent engineer to test the levels of the Williams, Proctor & Potts plans and pass judgment on the matter.

Reidsville, N. C.—City is discussing construction of sewer system.

Danville, Pa.—Metzger & Wells, of Philadelphia, have plans for a sewage disposal plant to be built for the State Hospital for the Insane at Danville.

Archbold, O.—The construction of a sewerage system is under consideration.

East Liverpool, O.—Council has passed resolution declaring it necessary to place a sanitary sewer on Bank street, from Avondale to Calcutta street; also one providing for the construction of a sanitary sewer on St. Clair avenue, from Avondale street to Princeton avenue.

Lancaster, O.—Bids for \$12,000 worth of sewer bonds to run one to twelve years at 4 per cent., have been received as follows: Farmers and Citizens' Bank, Lancaster,

\$12,137; Mayer, Cincinnati, \$12,004; Well, Roth & Co., Cincinnati, \$12,003.

Steubenville, O.—Council has passed ordinance to extend sewers on certain streets and alleys on La Belle View; ordinance to construct a sewer on Alley C, between Clinton and Ross streets; ordinance to construct a sewer on Garrett avenue on south side, from Railroad avenue to Linden avenue.

Steubenville, O.—Bids will be received December 2, noon, for furnishing the necessary labor and materials for the construction of vitrified pipe sewer on Grandview avenue and alleys in extensions of the Pleasant Heights Sewer System.—H. G. Simpson, Clerk, Board of Public Service.

Provo City, Utah.—Proposals for the constructing of approximately 8,800 feet of vit. sewer pipe of the sizes designated in specifications; work of said construction shall be complete not later than the 15th day of April, 1909.—David Johnson, City Recorder.

Allentown, Pa.—City Engineer Weirbach has presented to Councils a carefully drawn ordinance according to which, if passed by Councils, the citizens of this city will, on February 16 next, be given an opportunity to vote on a loan of \$400,000 to begin the construction of sewerage system.

Darby, Pa.—Borough Engineer Damon has plans for the joint sewage disposal of eight boroughs. Taking the proposed line of an intercepting sewer running along Darby Creek from Baltimore avenue, Lansdowne, and from Church lane, Yeadon, along Cobb's Creek, as a basis, from which were figured the cost of each borough, the following table of expenses was estimated for each borough, as follows: Sharon Hill, \$4,732; Colwyn, \$3,789.50; Darby, \$25,239.50; Yeadon, \$3,789.50; Collingdale, \$3,789.50; Lansdowne, \$12,623; Aldan, \$3,152.50; Clifton, \$7,884.50, making a total of \$65,000 in all.

Harrisburg, Pa.—State Health Commissioner Dixon has approved the construction of the sewers in Rebecca street, Fifth avenue and Pickwick alley, on condition that all storm water be excluded and that these sewers be part of the general system which is to be considered in relation to the problem of sewage disposal next year; city required to furnish plans for the disposal of all drainage from houses and plants by next summer.

Hazleton, Pa.—Council has received resolutions providing for the construction of a 15-inch terra cotta sewer pipe on Carson street in Seventh street; of a seven feet six-inch by eight feet (7' 6" x 8' 0") stone arch sewer, beginning at the present stone arch sewer at Mill and Mine streets.

Meadville, Pa.—Council has directed the City Engineer to prepare an estimate for improving Mill run; also to prepare an estimate for improving Neason run, both with a view to lessening the danger of damage by floods.

Philadelphia, Pa.—Council has passed ordinance for construction of sewers in Blavis, Brill, Broad, Camac, Cambria, Caskey, Clearfield, Locust, Penn, Phillena, Rector, Richmond, Sixty-first, Tenth, Twenty-fourth and Union streets and Hazel avenue.—J. E. Reyburn, Mayor.

Pittsburg, Pa.—Council has referred an ordinance granting Henry Phipps the right to construct a conduit from the Phipps power plant in Duquesne way under Penn avenue to the new May building, Liberty avenue, to the Committee on Corporations.

Tarentum, Pa.—Council has instructed Solicitor to amend the old law giving the borough permission to purchase property outside of the borough limits on which to build the plant and present the same to George E. Alter to be presented to the Legislature at the next session.

York, Pa.—Engineer Mayer, of the Street Railways Company has been authorized to resume work as soon as possible. A sewer will be put down to remedy the difficulty with the flow of water in that section as it will be made to carry it north on Broad street to the Poorhouse run.

East Providence, R. I.—The sewer system plans are being discussed by the East Providence Business Men's Association and the question has been continued to a later meeting, when it is proposed to have copies of some of the plans at the meeting, together with the financial details.

Bennettsville, S. C.—Bids will be received December 2, 2 P.M., by Sewer Commission, for labor and material for constructing sanitary sewer system to consist of about six miles of 8 to 15-inch vitrified pipe sewer.—Bandy & Myers, Engineers, Greensboro, N. C.—T. E. McCall, Chairman.

Redfield, S. D.—Bids will be received February 1 for the purchase of \$18,000 five per cent. 20-year sewer bonds.—H. D. Patch, City Auditor.

Manning, S. C.—Surveys and designs are being made for a sewer system for this city. R. E. and E. N. Beaty, Engineers, Georgetown.

Park City, Tenn.—W. C. Crozer, City

Engineer of Park City, with his son, Hugh Crozer, is now making the survey for the sewer system to be constructed from the bond issue; the Park City sewer laterals will connect with the main sewer of the city of Knoxville.

Arlington, Tex.—Council has promulgated the order of election for the voters to decide by vote Dec. 22 if bonds to the amount of \$25,000 shall be issued for the purpose of constructing a sewer system for the city. The campaign promises to be a warm one.

Dallas, Tex.—Sanitary Department Construction force will construct 153 feet of six-inch sanitary sewer on Main and Hawkins streets.

North Ft. Worth (Ft. Worth P. O.), Tex.—The proposition to issue \$50,000 of bonds for constructing sewers has been carried.—Jno. F. Grant, Mayor.

Norfolk, Va.—The Berkley Ward and Improvement Committee has adopted a resolution recommending to the Councils the purchase of about an acre of land lying between Fourth street and the river, and the acquisition of the right of way through the remainder of the distance which the proposed drain will traverse; drain is to run from Second street to the river, between Poplar and Berkley avenues; entire cost will be \$2,800.—City Engineer Brooke.

Winchester, Va.—Common Council has ordered a special election to be held on January 7, 1909, for the purpose of determining whether to issue bonds to the amount of \$50,000 with which to provide about eight miles of small pipe sanitary sewers for the city; plans and specifications have already been made by Engineer N. Wilson Davis, and it is expected that the voters will indorse the contemplated improvements.

Green Bay, Wis.—Bids will be received December 2 for construction of sewers in certain streets according to plans and specifications.—Fred F. Martin, Clerk of the Board.

WATER SUPPLY

Oakland, Cal.—Council has adopted resolution that the Special Water Committee ascertain whether joint arrangements can be made whereby the proposed Hetch-Hetchey water system to be inaugurated in San Francisco can also be utilized in Oakland.

San Bernardino, Cal.—The Jewel Water Company has been formed for the purpose of developing water and water rights for irrigating the lands of the stockholders in blocks 71 and 74 of the Rancho San Bernardino and to distribute the water to the stockholders at actual cost; capital stock is \$9,000. The directors are J. M. Lymburner, W. M. Bates, J. M. Taylor, A. Gregory and H. Gregory.

The Fairview Water Company also has been formed for the purpose of furnishing water for irrigating and domestic use to the stockholders in blocks 71 and 74 of the Rancho San Bernardino; capital stock is \$9,000; directors, A. Gregory, F. G. Smith, Joseph Wix, J. O. Langford and Edwin N. Nahemms, all residents of Redlands.

San Francisco, Cal.—The special Water Committee of the Board of Supervisors has reminded the officials of the Spring Valley Water Company that practically nothing has been done since last May in the way of extending the mains of the company or placing additional hydrants for fire protection, work having been authorized.

San Francisco (Ocean View), Cal.—A water system to cost \$10,000 will be installed.—Address Town Clerk.

Woodland, Cal.—The publication of the sale of the Yolo County Consolidated Water Company was premature, according to the information obtained from one of the stockholders here. A new company will be formed to construct dams and reservoirs and to establish a power plant; new company will be known as the Clear Lake Power and Irrigation Company.

Limon, Col.—Major Samuel Moore, of Greeley, has purchased property near Limon; he proposes constructing a high dam on this site at once.

Athens, Ga.—Council has recommended that the City Engineer take steps at once looking to the purchasing of the machinery and material necessary to the execution of the plans submitted by him for the enlarging and improving of the water works system, viz., the installation of a new 230-h.p. pump, a larger sedimentation basin, four new filters and other minor improvements; Water Works Committee is engaged on the following work; Improvements at the plant, \$16,800; new boilers, \$1,200; water main to Barberville, \$5,474; water main to New Compress, \$2,516; water main to Dubose avenue, \$800; water main to agricultural hall, \$1,000; water main on Boulevard, \$711; water main on Lumpkin street, \$2,956; water main on Milledge avenue, \$990; water main on Nacoochee avenue, \$240; water main on Waddell street, \$129; extra

pump, \$800, making a total of \$33,616.
Grafton, Ill.—Council is planning to establish a municipal water system.

Grafton, Ill.—Council is arranging to establish a gravity water system.—Address City Clerk.

Muncie, Ind.—The County Board will build private water works system to furnish the court house and jail.—Address County Auditor.

Scottsburg, Ind.—C. W. Kelly, of Jeffersonville, has received franchise to establish water system.

Shell Rock, Ia.—A water tower and tank to cost \$1,700 will be erected.—Address City Clerk.

Ellis, Kan.—Specifications are being prepared for a water and light system for which bonds have been voted.—Address City Clerk.

Uniontown, Ky.—City will construct water works, and is securing estimates on water works machinery and supplies. G. F. Cecil, Manager Union Light & Power Co.

Delhi, La.—Council is considering question of establishing water works and also an electric light plant.

Baltimore, Md.—Mayor Mahool has announced the appointment of Fred. P. Stearns, of Boston, Mass., and John R. Freeman, of Providence, R. I., as the advisory engineers in the construction of \$5,000,000 reservoir in Gunpowder River Valley.

Oakland, Md.—City is drilling test wells and will soon invite bids for construction of water works and sewerage systems; \$60,000 bond issue has been voted; Penniman & Fairley, 411 Marine Bank Bldg., Baltimore, Md., Engineers.

Pittsfield, Mass.—William A. Reed & Co., of Boston and New York, were the successful bidders for the city's issue of \$100,000 water bonds; twenty-three bids were submitted, all of them being above 104, with the exception of the American Banking Company, which bid a fraction over 102; the successful bidder bid 1.04819 or \$48.19 on a thousand, which will bring the purchaser interest at the rate of .0357; the bonds are 100 in number, each of \$1,000 denomination, and bear interest at the rate of 4 per cent.

Grandville, Mich.—City Engineer Anderson of Grand Rapids has prepared estimates for installing a pure water supply at Grandville.

Brainerd, Minn.—City will purchase water works plant if the recommendation in the message of Mayor Crust delivered to the new Council is heeded.

Minneapolis, Minn.—Water Board is discussing ways and means of securing a pure water supply.—W. P. Cowles, City Engineer.

Red Wing, Minn.—The Water Works Board proposes to expend \$42,000 in improving water system; additional artesian wells will be sunk and filtration system established.

Clarksdale, Miss.—All bids have been rejected for the construction of reservoir, water mains, hydrants, valves, etc., and work will be done under supervision of the engineer.

Cartersville, Mo.—City will install water system at an early date, also extend sewer system.—L. M. Jones, Mayor; A. W. Canada, City Engineer.

Kansas City, Mo.—Frank S. Groves, George M. Meyers and Kelly Brent, members of the Fire and Water Board, accompanied by Wynkoop Kiersted, consulting Engineer, and W. G. Goodwin, Chief Engineer of the water works, are looking over sites for a new water works system on the Clay county side of the Missouri; purpose is to determine whether or not it will be practicable and profitable to the city to abandon that part of the plant on the Kansas side.

Joliet, Mont.—A gravity water system will be established by Norman S. Poole.

Mitchell, Neb.—Specifications are being prepared for an \$18,000 water system, for which bonds have been authorized.—Address City Clerk.

Albany, N. Y.—The Rensselaer Water Company has secured contract for city water supply and will make extensive improvements, including the erection of a large reservoir.

Branchville, N. J.—An election will be held December 15 to decide the question of issuing \$30,000 in bonds for the construction of water system.—Address City Clerk.

Auburn, N. Y.—Consulting Engineers Hazen & Whipple, New York City, have been retained by the Water Commissioners to make investigations and prepare plans for the construction of a filtration plant in connection with the present water works system.

Canterbury, N. Y.—Messrs Blake & Woodhull, Civil Engineers, of Newburgh,

have prepared a report concerning source of water supply for Storm King; Committee of five appointed at the public meeting which consists of A. C. Case, J. A. Tappen, R. Ladoux, Chairman; Col. S. C. Jones, and W. N. Davidson, of Firthcliffe, are considering this report.

Dunkirk, N. Y.—Preliminary arrangements are on foot to install a fine fountain at Union Square at an expense of \$2,000. The Merchants' Protective Association and merchants in the neighborhood of the square will contribute liberally, provided the common council will stand a part of the cost and the Water Board will do necessary wiring and furnish free current for the electric lights.

Rochester, N. Y.—The trio representing Summerville, White City and Windsor Beach districts which was taking care of the water supply matter, has reported that Mayor Edgerton had received the Committee and had said that the best thing the cottagers could do under the circumstances was to send him a written petition for the extending of the city mains to Summerville and the distributing of Hemlock water through the cottage district; he promised that he would recommend the petition to the Common Council and expressed the belief that the Council would take immediate action.

Celina, O.—St. Henry, a village nine miles south of here, has decided to issue \$13,000 bonds for a water works plant.

Columbus, O.—The Girard Water Company has been incorporated by Wm. J. Scholl, Morgan T. Whitehead, Henry R. Fothergill, Emory G. Cronich, and Jos. S. Rawson, to build a water works close to Girard.

Delaware, O.—The Delaware Water Company are making some very extensive improvements at the pumping station. Fourteen new wells have very recently been drilled; large dynamo will be installed and a complete electric light system installed.

Salem, O.—Municipal bonds for \$131,000 for the purchase of the Salem Water company's plant have been voted.

Afton, Okla.—The W. K. Palmer Company, Engineers, of Kansas City, Mo., are making plans for the construction of a \$30,000 water works plant.

Enid, Okla.—Estimates are being prepared for water system to cost \$125,000.—Address City Clerk.

Erick, Okla.—City has voted \$20,000 of bonds for construction of water works.—Address the Mayor.

Muskogee, Okla.—Two ordinances, providing for the sale of the \$550,000 water and sewer bonds of the city of Muskogee to Spitzer & Co., of Toledo, and providing for the assessing of taxes to meet the interest of the same and for the creating of a sinking fund, has been passed by City Council.

Chester, Pa.—Council has referred resolution that a fire plug be placed at the corner of Ninth and Flower streets, Eighth and Parker streets, and at Sixth and Wilson streets to Water Committee.

Harrisburg, Pa.—State Health Commissioner Dixon has approved the plans for filtering the water supply for the cross-river district and work upon the system will be started as soon as possible; the plans are for the Riverton Consolidated Water Company to erect a filter plant along the Yellow Breeches Creek, the source of supply, at which water will be filtered for the townships of Lower Allen and East Pennsboro, including the boroughs of Wormleysburg, Lemoyne, New Cumberland and Camp Hill; the plans have been drawn by James A. Fuentes, Consulting Engineer of the local Board of Public Works and Engineer in Charge of construction of the Steelton filter plant; in addition to the filter plant a new reservoir will be built back of Fort Washington and a standpipe will be erected where the present small reservoir now stands on top of the old fort; new basin and standpipe will give abundant pressure for fire and all other purposes and will admit water being furnished to Shiremanstown; the pumping station at the edge of the river in Wormleysburg will be abandoned.

Somerset, Pa.—The Johnstown Water Company, as security for a bond issue of \$750,000, has given a mortgage in this amount to the Johnstown Trust Company, trustee; extensive improvements will be made by the company next summer and in addition to the city of Johnstown a number of large towns in the northern part of Somerset County as well as in Cambria County will be supplied with water.

Swissvale, Pa.—Two hundred and seventy patrons of the Pennsylvania Water Company have voted to urge the council to construct a municipal water plant. John F. Burtt presided.

Wilkes-Barre, Pa.—The Directors of the Spring Brook Water Company have decided

to establish a meter system.—Colonel L. A. Watres, of Scranton, President of the Company.

Williamsport, Pa.—Council has not yet placed larger fire hydrant ordered for Fourth and Pine streets.

Cumberland Gap, Tenn.—The Eastern Kentucky Land Company have submitted a proposition to the town of Cumberland Gap that if the town will grant the company a twenty-year water franchise they will put in an entire new water system and guarantee a 600-horse-power pressure; new and larger mains will be put in and a large concrete reservoir built on the mountain side; new Board will meet shortly and take the proposition under advisement.

Jellico, Tenn.—J. B. McCrary & Co., of Atlanta, Ga., are making preliminary surveys, plans and specifications for water works.—S. P. Snyder, Mayor.

McKenzie, Tenn.—A \$20,000 bond issue for electric lights and water works is under consideration. Address City Clerk.

Dallas, Tex.—Bids have been authorized for the breeching connection for the boilers at the new pumping station.

North Ft. Worth (Ft. Worth P. O.), Tex.—The proposition to issue \$20,000 bonds for constructing water works has been carried.—Jno. F. Grant, Mayor.

Hamlin, Tex.—Estimates are being prepared for a \$25,000 water system.—Address City Clerk.

American Fork, Utah.—Council closed a deal with Joseph Kelly, of the Fourth Ward, for his 113-acre farm in the north-eastern part of the city, just under the bench, on which some valuable springs are located; the water from these springs will give the system about 25 pounds more pressure; the work of diverting the water to the present system will be started at once.

Salt Lake City, Utah.—Bids for the \$450,000 worth of water works bonds have been received from two bond companies by the City Council, but neither was opened; communications were read in which the bidders stated that they could not handle the issue at 4 per cent., and said that unless the rate of interest was increased to 4½ per cent. or higher, they would withdraw the bids; bidders were E. H. Rawlins & Sons, of Boston, Chicago, Denver and San Francisco, and McDonald & McCoy Company, of Chicago.

Everett, Wash.—Senator Sam H. Piles is interested in the plan of Everett's Board of Public Works in obtaining a municipal water supply and is introducing a plan at Washington, D. C., which is expected to result in granting this city the right to ownership of a certain water course in the Snohomish County forest reserve; supply desired is situated 22 miles east of Everett, back of Granite Falls; there is enough water of glacial creation to take care of a city many times the size of Everett, and the water is of the finest possible character; an opportunity is given to store a large amount of water in a lake, which can be formed by building a 40-foot dam across a canyon.

North Yakima, Wash.—Rachars and fruit growers to the number of forty have formulated plans for the organization of a company to provide Nob Hill, the richest spot in the Yakima valley, with a water system independent of the Northwest Light & Water company's plant which supplies the city with water, power and light.

Seattle, Wash.—Construction of a dam about a mile and a half below the present dam, which confines the waters of Cedar Lake, from which Greater Seattle obtains its water supply and the light and power plant is given its power for generation, whereby the level of the lake will be raised sixty feet and the body of water increased in dimensions by several miles, has been provided for by the Finance Committee's proposition for a bond issue for the extension of the lighting system has been increased from \$500,000 to \$800,000.

Tunnelton, W. Va.—City is considering construction of water works.

Kenosha, Wis.—Council decided to purchase a large fountain and set it up on Market Square, between Main and Church streets; matter of purchasing the fountain was left to the Committee on Public Grounds; purchase price of the fountain is not to exceed \$1,000.

Thermopolis, Wyo.—The State Board of Charities and Reform will soon ask for bids for furnishing and laying about 2,600 feet of 6-inch and 1,300 feet of 4-inch c.-l. pipe and about 1,000 feet of 12-inch wood-stave pipe at the Hot Springs State Reserve.—F. B. Sheldon, Secretary, Cheyenne.

Ft. Erie, Ont., Can.—The Citizens' Club is interested in the construction of water works.—J. J. Foster, President.

Port Arthur, Ont., Can.—The citizens have voted to construct a reservoir dam on Current River; also expend \$27,000 on the Onion Lake Dam.

LIGHTING AND POWER

Mobile, Ala.—Council has passed an ordinance granting to the Mobile Electric Company the right to construct, maintain and use a relief sewer connecting the power house of the Mobile Electric Company on the northwest corner of Royal and St. Louis streets with the Mobile river. P. J. Lyons, Mgr.

Pine Bluff, Ark.—A. Brewster, C. S. Bacon, Garland Brewster and A. J. Bacon have just consummated a deal whereby they become owners of the franchise, privileges and property of the Russellville & Ozark Mountain Light & Transit Company, which was organized in June, 1907, for the purpose of building a light and water plant in Russellville, Pope County, Ark., and an interurban line from Russellville to Dover; new company has been organized under the name of the Russellville Water & Light Company, with \$100,000 capital; A. Brewster, President, and Garland Brewster, Secretary; offices of the company will be in Pine Bluff; dam will be constructed across this river not much larger than a creek which will furnish ample water.

Van Buren, Ark.—W. R. Petty, Pine Bluff, Ark., is considering establishment of electric light plant at Van Buren.

Escondido, Cal.—The Directors of the Mutual Water Company have adopted a resolution authorizing a loan of \$30,000 by the Board for the installation of an electric light, heating and power plant; this will be installed half a mile below the reservoir, where the water has dropped 450 feet in the run from the dam, making the development of 157 horsepower possible; from this point to the city and valley, from three to seven miles westerly, the electric current will be transmitted by poles and wires.

Quincy, Cal.—H. O. Lague has been making numerous water locations in Plumas County, California, and an electric power plant will be erected. Water to the amount of 60,000 inches has been secured.

Sacramento, Cal.—The ordinance granting the Great Western Power Company a franchise to bring its power line into the city will probably pass at the next meeting of the Board of Trustees.

Washington, D. C.—An American consul in the Far East has reported that a company in his district is about to establish gas works at an estimated cost of about \$300,000; the company is now in the market for pipes, gas-fitters' tools, meters, fixtures, etc.; American manufacturers interested in securing a share of this business can obtain further particulars by addressing 2817 Bureau of Manufactures.

St. Augustine, Fla.—Bids will be received December 2, 5 p. m., for lighting the streets and public buildings with either gas or electricity or a combination of both for a period of one year from January 1, 1909.

Hawkinsville, Ga.—As soon as bonds are sold city will operate electric light plant to be constructed; will use present water works power; contemplates installing new engine and dynamo.—C. W. Harris, City Clerk.

Norcross, Ga.—Bonds, \$5,000, have been authorized for electric light plant.—Address City Clerk.

Reynolds, Ga.—City will construct lighting system.—S. H. Lockett, City Treasurer.

Rome, Ga.—City is considering construction of electric light plant.—Address the Mayor.

Thomaston, Ga.—City will vote on issuance of \$10,000 of bonds to improve and enlarge electric light plant.—J. T. Ingram, Jr., Clerk City Council.

Lincoln, Ill.—Alderman Coogan has suggested that the city should proceed at once to install the 15 arc lights along the interurban right of way, and the Light Committee was accordingly instructed to get estimates on installing the lights and getting everything in readiness to turn on the current; under the terms of the ordinance with the Illinois Traction system the interurban is to furnish current for 15 arc lights along its right of way through Lincoln, the lights to be installed by the city; Light Committee has also reported favorably on installing three new arc lights in the city, one to be located at the intersection of Tenth and Monroe streets, one at Sherman street and Williamette avenue, and the third at the corner of Kankakee and Davenport streets; none of the lights to be accepted unless all were installed; Alderman Coogan suggested that one new light be provided for the Fifth Ward and one for the Third.

Decker, Ind.—The Hydro Electric Company will erect a water power plant near Decker, on White River; work on the undertaking will begin as soon as Congress has granted permission to the company the right to proceed; Eugene Rush, of Vincennes, Ind., is securing engineering data.—S. F. Cresilius, Louisville, Ky., Engineer.

Lenton, Ind.—Council has decided to ex-

pend about \$15,000 for new equipment for the electric light plant.

Ligonier, Ind.—Municipal ownership of a lighting system for this city has been defeated.

Mulberry, Ind.—The Town Board is considering the construction of an electric light plant.

Newcastle, Ind.—Ambrose Petry, of Detroit, Mich., is rearranging details for building and artificial gas plant. He is head of the Newcastle Light, Heat & Power Co., now operating in this city.

River Park, Ind.—The Town Board of River Park has granted a fifty-year franchise to the Indiana & Michigan Electric Company, to extend its wires, supply street lights and furnish the inhabitants with light and power.

South Bend, Ind.—River Park Town Board has granted the Indiana & Michigan Electric Company a 50-year franchise for the extension of its lines into the town; D. D. Bates and Hon. Gilbert A. Elliott represent the electric company.

South Bend, Ind.—The Board of Public Works has ordered new electric lights at Fox street and Witmer avenue, Moulton and Carroll, Indiana avenue and Taylor street, Broadway and Marietta street and Dayton and Miami street. Lights have been ordered moved from the corner of Donald and Witmer avenue to Donald and Carroll street, from the corner of Carroll and Calvert to Witmer and Calvert and from Calvert and Miami to Bowman and Miami; a new light was also ordered at the corner of Calvert and Dale streets. Petitions have been filed for lights at the corner of Carroll and Elder streets, corner of Jefferson and Walnut, and on Euclid avenue between Michigan and Laporte avenues.

Sullivan, Ind.—J. W. Broady, of Indianapolis, is interested in the construction of a plant for the generation of electric power, for transmission to Indianapolis, Anderson, Crawfordsville, Marion and Newcastle.

Davenport, Ia.—Extensive improvements are being planned by People's Light Company, of Davenport, for next year's work; estimates for expenditure for the improvements will cover \$200,000; improvements and changes in the central gas plant will cost many thousands of dollars alone, while a number of miles of new mains will also be laid; not alone in Davenport is the company expanding and extending but also in Rock Island and Moline are various improvements being planned.

Iowa City, Ia.—The Lighting Committee has recommended asking for bids for 130 magnetite arcs; bids are also asked for 50 incandescents in addition to the magnetite arcs.

Keokuk, Ia.—The stock and franchise of the Keokuk & Hamilton Water Power Company has been transferred to financial interests which are expected to develop the water power of the Des Moines rapids; fifteen million dollars will be required to develop 200,000 horse-power; actual work must be begun by February 9, 1910.

La Port City, Ia.—The electric plant owned by the La Port City Public Utilities Company has been destroyed by fire and will be rebuilt at once.

Argentine, Kan.—The Bonner Springs Portland Cement Company will ask the Argentine Council for a gas franchise; work on the pipe line will commence as soon as the franchise is granted.

Ellis, Kan.—Engineers W. K. Palmer Company, Kansas City, Mo., are preparing final plans for an electric light plant for the city of Ellis.

Ottawa, Kan.—The Water and Light Board is making arrangements to enlarge the municipal electric light and water works plant, plans for which are being drawn by Washburn & Son; powerhouse will be enlarged. The old Corliss engine will be moved from the old power plant. Secretary of the Board has been directed to secure prices on new and second-hand 100-KW. generators. J. H. Bell, Mgr.

Athol, Mass.—The Connecticut River Power Company, which is erecting a station in Royalston, six miles from here, to supply towns and cities east of Fitchburg, will be urged to come here, as present company is giving poor service.

Greenfield, Mass.—Options have been filed at the Franklin County Registry of Deeds covering land along the north bank of Millers River, between the villages of Millers Falls and Erving, and controlling some valuable water powers; options are all made out to S. J. Cassidy, of Springfield; it is probable that some scheme for power development is to be announced before long.

Gloucester, Mass.—Council has received petition of the Gloucester Electric Company for 24 pole locations on Cherry street, one on Washington street and one on Wheeler street, locations being necessary to install street lights ordered by the city council.

Eunice, Mich.—Council has referred to

Public Works Committee the proposed franchise for the Interurban Electric Light & Power Co.

Ludington, Mich.—The Ludington Gas Company has plans for complete remodeling of plant; \$10,000.—W. F. Doelker is Manager.

Manistee, Mich.—L. J. Highland, representing the Interurban Electric Light and Power Company, is considering the building of an electric transmission line from their dam on the Sauble River at the foot of Hamlin Lake, to Manistee.

Saginaw, Mich.—Council and the Eastern Michigan Power Company, which has started work on the development of the Au Sable River water power, and expects to be able to deliver electrical current in a year or a year and a half, have come to an agreement over a franchise and the formal grant will probably be made in a week; maximum rates to be charged will be below the usual, in view of the fact that the generating medium, water power, is so cheap; company will next apply in Bay City for a franchise, and will then go farther north to Standish and the Tawas; company expects to deliver power and light within a radius of 250 miles of the dams on the Au Sable, and is beginning the work of right-of-way at the farthest points south, working northward.

Coleraine, Minn.—Plans for furnishing electricity by the city are nearly completed.

Rochester, Minn.—Bonds, \$50,000 to \$75,000, for a lighting plant will be issued.

Kansas City, Mo.—The Union Finance Company, of Kansas City, Mo., has applied for a 50-year franchise to supply light in St. Louis County; is proposed to supply it at 12½ cents per kilowatt-hour.

St. Louis, Mo.—Details of plans of T. N. Barnsdall, of Pittsburg, and others, to pipe natural gas from the State of Oklahoma to St. Louis, Mo., are much larger than was at first surmised; distance covered by the line will be about 330 miles by the air line; actual length of the proposed line will be between 360 and 400 miles; cost of laying 24-inch pipe this distance will be about \$7,400,000, the outlay for the pumping station along the line being extra; it is thought \$15,000,000 will be required for the completion of the project.

Great Falls, Mont.—Plans are being completed for the development of two powers near Great Falls; upper development is to be made at the falls known as Coulter's, Crooked and Rainbow, situated about three miles down the river from Great Falls; a crib dam about 25 feet high will be built with masonry head gate and waste gate structures; steel penstock 22 feet in diameter and about 2,500 feet long will extend from the intake to the power-house; latter will be of masonry construction containing about 30,000 horsepower of wheels and electrical apparatus; lower development is about 12 miles below Great Falls; canal will be 500 feet long, and directly below this the power-house; equipment will be a duplication of that at the upper development; engineering corps is engaged in making surveys and in the preparation of plans; work on the cofferdams has already begun and it is expected to proceed with the work of development to completion as fast as possible; portion of the power developed will be used at the Boston and Montana Smelter, at Great Falls, Mont.; balance will be transmitted to more distant places.—Henry A. Herrick, Engineer in Charge; C. T. Main, Boston, Mass., Engineer.

Reno, Nev.—A. Fleischbacker, of the Truckee General Electric American River Power Company, the London & Paris Bank, of San Francisco, and several other big corporations, is here in the interest of the Nevada Machinery & Supply Company, of Reno, a subsidiary corporation of those above given; plans of the latter company are to extend the power and light lines from Yerington to Rawhide for lighting purposes and to supply power to the mills in that vicinity and the numerous mines; \$25,000 has already been subscribed toward the plant, but about \$25,000 additional will be required; an attempt is being made to interest the Nevada Hills people at Fairview in order that the power and light line may extend to that camp.

Atlantic City, N. J.—The Atlantic City Electric Company will expend \$300,000 in installing conduits.

Madison, N. J.—Town Council is considering the construction of a gas plant.

Orange, N. J.—Orange Common Council will consider the proposition to have a municipal lighting plant at a star chamber conference.

Jersey City, N. J.—The Board of Aldermen have passed an ordinance granting a franchise to build and operate an electric light and power plant in Jersey City to the Mutual Benefit Electric Light and Power Company.

Buffalo, N. Y.—The Board of Supervisors have under consideration the purchase of a gas engine to furnish power for light-

ing the Seventy-fourth Regiment Armory.

Greece, N. Y.—The Town Board of Greece has granted a perpetual franchise to the Rochester Railway and Light Company to run a line through the village of Charlotte for the transmission of power and light and also to lay mains for gas in the village.

Gowanda, N. Y.—Bids will be received until December 2 for engine and dynamo and underground electric feeders from power house to superintendent's residence and staff house at Gowanda State Homeopathic Hospital.—T. E. McGarr, Secretary State Commission in Lunacy.

Sanford, N. C.—Carolina Light & Power Company (formerly Central Carolina Power Company), Raleigh, N. C., is having specifications prepared for brick substation to be erected at Sanford, for transmitting power from water-power electrical plant at Buckhorn Falls, on Cape Fear River, to Sanford; power will be furnished for lighting streets of Sanford and to manufacturing plants.

Cassleton, N. D.—The Northern Pacific has granted a site for the electric light plant.

Cleveland, O.—The Electric Illuminating Company has purchased site on which a new power house will be erected.

Bucyrus, O.—An \$80,000 bond issue to equip a municipal lighting plant for Bucyrus has been enjoined; number of bidders, but the bids were not opened.

Hamilton, O.—Council has passed resolutions requesting the Board of Public Service to place arc lamps on Hensley street, between East avenue and the canal, and on McGlynn street.

Lima, O.—C. E. F. Ahlm, Caxton Building, Cleveland, has completed plans and specifications for proposed municipal electric light plant; estimated cost, \$70,000.

Vermilion, O.—F. W. Coeh, general manager of the Lake Shore Electric Railway, has secured a franchise for illuminating the village of Vermilion; thirty arc lamps will be installed and the system will be maintained by the railway company.

Warren, O.—Council has deferred an attempt to grant power and lighting franchises to the Hydro Electric and Warren Water and Light Companies over Mayor Kilpatrick's veto.

Portland, Ore.—Council is discussing terms of proposed blanket franchise sought by the Portland Railway, Light & Power Company for rights of way over 40 or more streets, two ordinances have been presented to council.

Portland, Ore.—Edwin G. Amme and associates have secured water rights on the Satiam River, aggregating 10,000 horsepower; a company will be incorporated under the name of the Central Oregon Power Company, for the purpose of operating a hydro-electric plant, which will furnish electrical service to Lester and Quartzville mines, Salem, Albany and adjacent towns.

Weatherford, Okla.—City will construct electric light plant in the near future; will cost \$2,500 to \$3,000; equipment for this plant and for extension of water works to include installation of 150-horse-power boiler, two 100-kilowatt alternators with engines, switchboard and fire pump; cost of machinery about \$20,000; date of opening proposals for equipment not yet determined; capacity 4,000 lights.—W. R. Cunningham, City Clerk.

Vale, Ore.—The Vale Light and Water Company of Vale, Ore., has been reorganized; R. C. Carter of Boise has purchased a controlling interest in the company; lighting plant will be overhauled and new machinery installed.

Chester, Pa.—Council has referred resolution that an arc light be placed at the crossing at Front and Franklin streets and at Sixth and Wilson streets to Light Committee.

Ellwood City, Pa.—Council has decided to advertise for bids for installing an electric plant in Ellwood City; town favors a municipally-owned plant; estimates of the cost of installing a plant have been from \$11,000 to \$13,500.

Lebanon, Pa.—John E. Illig, Millcreek township, is about to close a contract for the establishing of an electric plant, to be located at Millbach Springs in the building used for scores of years as a feed and flour mill; as an extra supply a large dam will be made and thereby a sufficient amount of water congregated to operate the plant which is to furnish Richland, Newmans-town, Schaefferstown and other nearby towns with electric current for light and power; a company is being organized with a capital of \$150,000 to promote the industry.

Meadville, Pa.—Council has referred a petition for a light in Sherman street, between North Main street and Highland avenue to Water and Light Committee; also a petition for an electric light at South Cottage street and Short alley.

Mifflinburg, Pa.—Town Council is considering the installation of an auxiliary

steam plant in the municipal electric light plant.

Mt. Joy, Pa.—A charter has been granted to the Donegal Gas Company, of Mt. Joy, to furnish gas in Mt. Joy and vicinity; capital, \$10,000. Incorporators: H. C. and Clarence Shock and M. C. Bowman.

Pine Grove, Pa.—Council is considering the matter of establishing a municipal lighting plant.—Address Town Clerk.

York, Pa.—Council has been asked for five additional lights for this year.

Lancaster, S. C.—Prices are wanted on gasoline lighting plant for \$4,000 church building. C. T. Hardin, chairman Building Committee, R. F. D. No. 6.

Mobridge, S. D.—An electric light franchise has been granted to E. E. Empey, H. B. Miles and others.

Lewisburg, Tenn.—Lewisburg Light and Power Company will purchase municipal electric light plant and make various improvements, including installation of ice-manufacturing and cold-storage plant; will take over outstanding bonds of plant at cost of \$6,000.

Dallas, Tex.—The Directors of the Dougherty Lake Club have appointed J. E. Chase and Dr. F. M. Donnelly a committee to purchase a lighting plant.

Dallas, Tex.—Municipal Commission is considering the application for franchises permitting the laying of mains in the streets of Dallas for the conveying of natural gas. The Texas company is the real financial power behind the development of the new Henrietta Natural Gas field and the projected Henrietta, Fort Worth Pipe line. Judge A. S. Beaty, attorney.

Galveston, Tex.—Board of City Commissioners is considering installation of new engines at municipal electric light and power plant.—H. A. Landes, Mayor.

McKinney, Tex.—Council has decided to purchase material for the extension of the city electric light system, a number of additional arc lights to be put up over the city; the material to be purchased at once and the work of making the extension will soon be in progress.—W. E. McKinnon, of Dallas, Superintendent of the City Water Works and Electric Light System.

Sabinal, Tex.—Sabinal Water and Ice Company increased capital stock from \$20,000 to \$28,000 and will furnish electric light and motor power.

Salt Lake City, Utah.—The Grand Canyon Power Company has filed application for 2,000 second feet of water from the Green river in Emery and Grand counties; water power will be employed to run a plant capable of producing 38,000 horsepower; plan is to place an immense dam in the Green river about 200 feet below its junction with Coal Creek, in Emery county; dam will be large enough to back water up in Green river for twenty miles; diverting channel will be constructed at the junction of the two streams, and it will be 24 feet wide, 10 feet deep and 9,000 feet long; big power plant to be built there will have a horsepower greater than all other Utah plants combined; great turbines which will generate over one-half the amount generated from the turbines on the American side of Niagara Falls will be placed in the plant; water will be returned to Green river 300 feet below the plant; it is proposed to run lines across the country to reach towns far away and to furnish power for mining purposes in the coal districts.

Klona, Wash.—Surveys have recently been made through Klona by a crew of men representing the Electric Light & Power Company of North Yakima; line is to connect the principal towns of Benton County and will, when completed, be a great factor in developing the new county; word has been received at Klona station that a carload of poles will arrive soon; surveyors are a familiar sight now in this section, being busy in the projected new town of Benton, across the river from the old town of Klona; this town will be platted, furnished with concrete sidewalks and lighting plant, before lots are placed upon the market.

Seattle, Wash.—Committee on Lights has recommended bill submitting to a vote of the people December 22 an issue of \$500,000 worth of bonds for light and power extensions.

Tacoma, Wash.—City Electrician F. H. Lauzon is planning a new system of lighting for Pacific avenue, which, if introduced, will, he says, make the best lighted thoroughfare in the United States. Instead of lighting the streets with clusters of incandescent or Tungsten lights, Mr. Lauzon proposes to place eight, or possibly ten, arc lights to each block; three lights, each having a strength of 2,000 candle power, will surmount an artistic concrete post 12 feet high; arc will be inclosed in a large white globe that will serve to evenly distribute the light over a large area; in order to test this system of lighting, five of these lights will be installed on Oak street, between Division and Sixth avenue; concrete posts cost \$40 each, and the arc lights cost \$31

each; if the system is adopted on a large scale, the city can secure molds and make its own posts at considerably less than the regular posts, states the electrician; if the arc lights to be installed on Pacific avenue prove as satisfactory as is anticipated, states Electrician Lauzon, the city will likely replace the present standards on C street with the arc lights.

Madison, Wis.—It is proposed to install a municipal lighting plant to light city buildings.

Reedsburg, Wis.—A day circuit is to be established on the city electric power lines; \$8,000 expenditure is contemplated in making the change.

Windsor, Ont., Can.—Citizens will shortly vote on expenditure of \$25,000 to provide a practically new lighting plant.

Twillingate, N. F., Can.—Frederick S. Palmer of Boston, Mass., has obtained a franchise for an electric light and power plant at Twillingate, which he will install this winter.

FIRE EQUIPMENT

Riverside, Cal.—City is securing data concerning auto fire apparatus.—Mayor Evans.

Santa Barbara, Cal.—A fire engine house will be built in the Oak Park district.—Address City Clerk.

Savannah, Ga.—City is advertising for bids to furnish an 85-foot aerial truck and a hose wagon.

Aurora, Ill.—Chief of Fire Department has asked for a new ladder truck.

Fox Lake, Ill.—Town has organized a Fire Department and will procure apparatus.

Gary, Ind.—A fire station is to be erected at Seventh avenue and Massachusetts street; hose and fire apparatus to be purchased.

Shell Rock, Ia.—A fire company is to be organized.—Address City Clerk.

Winfield, La.—Citizens will organize an efficient Fire Department.

Revere, Mass.—Citizens will vote on December 7 on purchase of a chemical engine.

Big Fork, Minn.—Arrangements are being made to purchase hose cart.

Minneapolis, Minn.—Bonds, \$50,000, have been authorized for the construction of new engine houses and purchasing new equipment.—Alfred Merrill, President of the Council.

Plainfield, N. J.—Council has allowed \$2,200 for combination chemical and hose wagon; \$700 for a pair of horses, and \$1,350 for hose and miscellaneous expenditures.

Youngstown, N. J.—Town is considering fire protection.—William Henry, of Niagara Falls, is heading the movement.

Cohoes, N. Y.—Chief Collins has recommended immediate purchase of 2,000 feet of hose.

Lindenhurst, N. Y.—Arrangements will be made to purchase additional fire apparatus.—Wm. Rall.

Newburgh, N. Y.—Citizens have voted an addition to the house of Washington Steamer No. 4; a proposition for a new house for Chapman Steamer has been defeated.

Rochester, N. Y.—Three new fire houses are planned to add to the efficiency of the department; one of the new houses will be in the Twentieth Ward; a hose and engine company will be stationed here; a chemical and hose combination wagon will be installed in this house with a high power engine in order to look after the factories built during the past five years in the Twentieth Ward; Fourteenth Ward fire house will be situated on the Warner tract at the brow of the South avenue hill; Citizens Volunteer Company of Brighton will be retained in service but new quarters will be constructed in East avenue near Probert street; an engine and a hose company will be installed in this house.

Rochester, N. Y.—Architects Leon Stern and Otto Black have been retained by the city to prepare plans for a two-story and basement fire house; \$18,000.

Akron, O.—The Safety Board is still considering plans for the new South Akron fire engine station; funds for this improvement and the purchase of the new motor fire apparatus were provided for some time ago by the passing of a \$30,000 bond ordinance; Board will probably advertise and start the work upon this new building at once, although there is a possibility that the same may be held over until next spring.

Dayton, O.—Preparations for the building of a new fire engine house in the East End will be made by the Board of Public Safety at once; Clerk has been instructed to advertise for bids to be opened on December 14; the building is to be erected on Jersey street, but is not to be equipped before next year.

Youngstown, O.—Chief Orr is urging the purchase of an electric fire wagon instead of the erection of a new house in the East End.

Ardmore, Okla.—Council has authorized

expenditure of \$11,000 for better equipment of Fire Department.

Altoona, Pa.—Four wards of the city, the Third, Fourth, Seventh and Twelfth, are urging appropriations for the erection of new fire stations. An outlay of at least \$100,000 is required, for ground cannot be purchased and a modern building erected and equipped for less than \$25,000.

Butler, Pa.—Council has received a petition for fire protection in the Park View district.

Butler, Pa.—Fire Committee has been instructed to secure plans for a building to house a hose wagon and large hook and ladder truck; committee is also considering installation of Gamewell 27-box high grade fire alarm system at a cost of \$6,555.

Hazleton, Pa.—Council has authorized City Clerk to advertise for, receive and present to councils, proposals for the purchase of a combination chemical engine and hose wagon.

Lebanon, Pa.—Council has passed bill for the purchase of rubber coats and boots for the Police Department, and hose for two Fire Department companies, the Good Will and Rescue.

Monongahela, Pa.—City is to improve its fire service.

South Bethlehem, Pa.—Borough Secretary Thomas Ganey read bids for materials for the rebuilding of the fire alarm system; action has been deferred, the Fire Committee to submit a report at next meeting.

Williamsport, Pa.—Council has not yet purchased 800 feet of hose needed for Fire Department.

Lead, So. Dak.—Aldermen here recommended that an extension ladder be purchased for fire purposes.

Norfolk, Va.—Portsmouth Hook and Ladder Company has practically concluded to purchase new uniform equipment of attractive design.

Tacoma, Wash.—Council Committee on Fire and Water has decided to recommend the purchase of additional fire alarm boxes and material for extending the circuits, as asked for in the report of A. F. Wright, superintendent of the fire alarm telegraph system.

Tacoma, Wash.—F. H. Porter, Inspector for the Fire Underwriters, has urged the need of a fire-boat to protect shipping interests.

Milwaukee, Wis.—City has authorized the purchase of 10,000 feet of hose in open market.

Parsons, W. Va.—The city has voted \$30,000 bonds to erect a Fire Department building and construct and maintain water works system.—H. L. Bennett, Mayor.

Racine, Wis.—Committee on Fire, Water, and Police and Finance has ordered bids advertised for the purchase of an automobile for the Chief of the Fire Department. W. S. Dooley, Fire, Water & Police Committee.

Milwaukee, Wis.—Automobile power will be installed on all fire apparatus.

St. Catharines, Can.—Town has appropriated money for a steam fire engine.

ELECTRIC RAILWAYS

Huntsville, Ala.—The Huntsville, Chattanooga and Birmingham Ry., Light and Power Company is preparing to build its extensions down Church street to the Southern depot; line will be carried on to Monte Sano at an early date.

Corte Madera, Cal.—Citizens of Western San Rafael, San Anselmo, Ross and Kantfield may organize a stock company to build a street car line between the towns.

San Diego, Cal.—Council has passed an ordinance awarding a franchise to the Point Loma Railway Company to construct a street railway, commencing at intersection of southerly line of Wright and Hancock streets.

San Diego, Cal.—The Point Loma Electric Railway, San Diego, has filed a petition for an amendment to the ordinance of the City Council, granting a franchise to the company; company now asks that the franchise grant the company authority to use electricity, gasoline or steam as a motive power, instead of electricity alone, as the franchise now specifies.—Charles Collier, Attorney.

Denver, Col.—The Crags & Canon Railway Company has been incorporated in Colorado to build a standard gauge railway from Crags to Eldorado Springs and Boulder; capital, \$300,000; incorporators: Geo. F. Keller, Ft. Wayne, Ind.; L. B. Bradley, Chicago; G. A. Brink, D. C. Nevin and N. S. Williams, Denver.

Golden, Colo.—Lookout Mountain Railway Company has applied to city council for franchise on certain streets; proposed railway will connect with the Denver & Northwestern and run to the city limits; by a series of switches and loops, new line will climb to the summit of Lookout Mountain, four miles west of Golden, and 1,700 feet higher.

Norwich, Conn.—The stockholders of the Norwich, Colchester & Hartford Traction Company have perfected organization and they will complete arrangements for a survey of a trolley line from this city to Hartford.—Costello Lippitt, president; Lucius Brown, Secretary, and Henry W. Tibbits, Treasurer.

Atlanta, Ga.—The Atlanta, Griffin and Macon Railway has been granted an extension of thirty days to enter Atlanta.

Clarksville, Ga.—The Clarksville Railway Company has been chartered to establish a street railway system in Clarksville; capital, \$10,000; incorporators: E. S. Hunnicutt and Robert McMillan.

Fairburn, Ga.—G. N. Perry and Frank Lederle, of Atlanta, Ga., have been awarded the contract for surveying a route for the proposed electric railway which is to connect Atlanta and Union City; a corps of engineers have started surveying; distance from Union City to Atlanta is only 17 miles; officers and directors of the company which will build the line are: W. T. Roberts, President; J. H. Harris, Secretary; J. H. Longino, Treasurer; Dr. L. M. Hobgood, Dr. J. T. Longino, W. H. McLaren, Dr. J. B. Carmical, J. F. Golightly, D. A. Carmical, W. A. McCurry, W. H. Mims.

Cairo, Ill.—Council has granted to the McKinley syndicate a fifty-year interurban franchise and a twenty-year street railway franchise. The McKinley people will purchase the street railway electric lighting and gas plants of Cairo from the Halliday interests and will begin at once the construction of an interurban road to Mound City or Mounds; interurban is chartered to run between Cairo and St. Louis; new owners will at once rebuild the gas plant and install a new electric power plant.—L. E. Fischer, General Manager of the McKinley Syndicate.

Cairo, Ill.—Council has granted to the Cairo and St. Louis Railway Company an interurban franchise and a street railway franchise; Illinois Traction Company will purchase the street railway, electric lighting and gas plants of Cairo from the Halliday interests and will begin at once the construction of an interurban road to Mound City or Mounds; interurban is chartered to run between Cairo and St. Louis.

Kankakee, Ill.—City Electric Railway will add two miles of track to the system the coming season. B. M. Rollins, mgr.

Peoria, Ill.—Peoria & Galesburg Railway Co., has been licensed; principal office, Peoria, capital stock, \$100,000; it is to be constructed from Peoria, through Peoria and Knox counties, to Galesburg, and from Peoria, through Peoria and Fulton counties to Canton, Fulton county.—D. M. Mayer, Peoria, Arthur C. Black, Peoria and others are incorporators.

Indianapolis, Ind.—City Council has passed the ordinance granting E. C. Atkins & Co. the right to run another switch into the plant in South Capitol avenue.

La Grange, Ind.—The projectors of the Ligonier, Lagrange and Southern Electric Railway have announced that they will at once begin the survey of a new route, which will run about five miles west of Lagrange.—J. N. Babcock, President.

Nashville, Ind.—Joseph Irwin, of the Indianapolis, Columbus and Southern, is making plans to build an electric line from Columbus, via Nashville, to Bloomington; inquiries have been made in regard to franchises and right-of-way.

Chanute, Kan.—Council has granted the Southern Kansas Railway, Light and Power Company a six months' extension of time in which to begin work in the city of Chanute on its electric road.—R. C. Rawlings, President.

Topeka, Kan.—Council has passed an ordinance granting the right-of-way to the Topeka-Southwestern Railway Company, its successors or assigns, through the city of Topeka, Kansas, and repealing Ordinance No. 2798.—Wm. Green, Mayor.

Alexandria, La.—The Alexandria Electric Railway Company will let contracts during the next two weeks for overhead material for a two-mile extension.—I. B. White, Superintendent.

Bay City, Mich.—Negotiations are pending between the Grand Trunk Railway Company and the Saginaw-Bay City Railway and Light Company, owning and operating the interurban division for the purchase of the interurban bridge spanning the Saginaw River just south of the southerly corporate limits of Bay City; company proposes the throwing of the interurban tracks between Milwaukee and the interurban bridge over to the east side of the river and the construction of a double track railway between Bay City and Saginaw on the east side.

Kalamazoo, Mich.—Four miles of track in the city of Kalamazoo will be taken up and replaced in the spring. New track will be 30 pounds heavier per yard than the one now in use; it is planned to relay the north Burdick track with rails of the grooved

girder type; altogether \$30,000 will be expended on the job.—General Superintendent Mr. Millsbaugh.

Kansas City, Mo.—A proposed interurban electric line, to pass through Bonner Springs, Turner and other small towns west of Kansas City, and to connect with the Metropolitan at Argentine, is being talked of by the farmers along the proposed route and the residents of the towns through which it will pass; the farmers will grant a right-of-way and are also willing to take stock in the company if formed.

Great Falls, Mont.—A survey is being made for the proposed electric railway between Great Falls and Choteau, Mont., distance 60 miles.—G. C. Bower, Poughkeepsie, N. Y., Promoter.

Reno, Nev.—W. P. Hammon, Merchants' Exchange Bldg., San Francisco, Cal., has acquired control of the Truckee River General Electric Company; property consists of two power plants on the Truckee River and a distributing system, transmitting electricity to Reno, Carson, Virginia City, the copper mining district at Yerington and other sections of Nevada. It is stated that Mr. Hammon intends to enlarge the plants and build branches throughout the mining districts in Nevada, which will involve an expenditure of about \$1,000,000; orders have been given for extension of the Reno street car lines to cover the entire city.

Atlantic City, N. J.—An electric railway is to be constructed from Pennsgrove to Pleasantville by a syndicate, headed by Wetherill & Company, Chester, Pa., to connect Atlantic City with Wilmington by a shorter route, including a ferry across the Delaware; the new road will probably enter the city over the right-of-way of the Suburban Traction Company, recently purchased by the Wetherill syndicate for \$91,000.

Morrisstown, N. J.—The Board of Freeholders has granted a franchise to the Morris County Traction Company to build its line on the county roads in Hanover Township.

Ogdensburg, N. Y.—Plans are under consideration for the construction of an electric railway, about 75 miles in length, from Ottawa, Ont., to a point on the New York and Ottawa Railway, giving connection with Morrisburg on the St. Lawrence River.—J. W. Allison, of Morrisburg, Ont., and Leslie Shaw, former Secretary of the Treasury.

Burlington, N. C.—The Burgrahaw Interurban Company has been incorporated to build and operate an electric railway between Burlington, Graham, Haw River and other points near Burlington; capital, \$500,000; incorporators: C. E. W. Tenney, New York; F. S. Jones, Nashville, Tenn., and E. S. W. Dameron, Burlington.

Hood River, Ore.—H. B. Langille, secretary of the Upper Hood River Valley Development League, has applied to the City Council for a franchise for an electric railway in Hood River; application has also been made by C. A. Bell, proprietor of the Mount Hood Hotel, for a franchise to construct a line.

Johnstown, Pa.—A corps of engineers have been engaged for the past several days making a preliminary survey of the proposed line of the Johnstown and Galitzin Railway between Johnstown and Gels-town.

Meyersdale, Pa.—The Pennsylvania and Maryland Street Railway Company has been granted the right to make extensions of its lines; line will reach Somerset.—H. H. Manst, General Manager, French Lick, Pa.

Pittsburg, Pa.—A charter for the Banks-ville and West End Street Railway Company, organized for the purpose of constructing and operating a trolley line from the Banks-ville road at the Allegheny County boundary line through Banks-ville and to a point beyond the dividing line of Union and Scott townships, has been applied for; applicants for the charter are W. E. Kusen, A. J. Schmidt, C. August Steutz, W. P. Heckman and J. D. C. Miller.

York, Pa.—President W. F. Bay Stewart and Engineer Mayer, of the York Railways Company, and a number of city officials, including Mayor Weaver, City Engineer McKinnon, Highway Commissioner Strine, Chairman Brenner and Messrs. Stauffer, Schroeder and Lease, of the Highway Committee, are considering franchises for about five miles of street railway extension; improvements in the street railway system of the city, which will involve the double tracking of West Market street from the end of the present blocks to Richland avenue, Richland avenue to Linden, Linden avenue to West York avenue, West York avenue to the Western Maryland railroad station are being considered; ordinances being prepared for the extension of the present system will provide for the construction of three different lines; one of these will leave Market street at Fulton and extend from Fulton to Rouse avenue,

from Rouse avenue to the city limits; another will leave College avenue at Water street, and extend to Penn Park, through the Kurtz tract to Jackson street to the city limits; a third line will leave George street at Jefferson avenue and extend to Newberry street, to Smyser street, to Penn street.

Austin, Tex.—The interurban proposed to extend from Austin to Lockhart had its franchise extended to February of next year, after which time, if the road is not built, the franchise will probably be nullified.

San Antonio, Tex.—Attorney-General Sluder approved the charter of the Artesian Belt Railroad of San Antonio; capital \$70,000; proposed line is to run from MacDona, Bexar county, to Simmons City, Live Oak county; distance 70 miles.—Chas. F. Simmons, E. P. Simmons and others are incorporators.

Chehalis, Wash.—W. J. Pattison and A. Welch have applied for a fifty-year franchise to operate a street railroad line through certain streets in this city; work will begin on the line in six months after the granting of the franchise; company to continue south as far as Portland as fast as the right of way could be secured. The same men who are applying for the franchise have made a like application to the city of Centralia, and the purpose is to connect the two cities, which are only four miles apart. The franchise was very favorably considered by the council at its first reading.

Seattle, Wash.—Council has passed bills granting franchises to the Seattle Electric Company on portions of Twelfth avenue South and others, Phinney avenue and others; Pike street and East Pike street, and others; Olive street and others; Main street and others, and Pine street and others.

Pewaukee, Wis.—The Milwaukee Western Electric Railway Company has applied to the Village Board for a franchise to build a line through Pewaukee; road when completed will connect Milwaukee, Wauwatosa, Brookfield, Pewaukee, Hartland and Beaver Dam.—J. Q. Briggs, General Manager.

Chatham, Ont., Can.—The Chatham, Wallaceburg and Lake Erie Railway Company will extend its line from Wallaceburg to Dresden and on to Thamesville next summer.

BRIDGES

Malvern, Ark.—A bridge will be constructed over Ouachita River at Green Ferry; cost, about \$15,000.—A. I. Roland, County Judge.

Washington, Ark.—Hempstead County will construct five steel bridges during 1909. Address County Commissioners.

New Hope, Cal.—Board of Supervisors of San Joaquin County at Stockton will soon let the contract for the construction of a bridge over the Mokelumne River, between Galt and New Hope.

Browning, Ill.—The proposition to build a steel bridge across Muddy Creek is being considered.—Address Town Commissioners.

Chicago, Ill.—The Chicago and Oak Park Elevated Railway will have a 155-foot viaduct erected on its main line on Lake street, between Clinton and Canal streets; this is necessary in order that adequate headroom might be secured below its structure for the eight-track approach that the Chicago and Northwestern Railway will build into its new \$20,000,000 terminal station; approaches of the elevated structure have been raised already to an increased height of six feet at the point where the viaduct will be erected.

Springfield, Ill.—The proposed interurban bridge over the Mississippi river at Venice, near East St. Louis, which has been planned by the Illinois Traction system for some time is now to be a reality; land for the bridge, as well as all necessary franchises were secured some months ago and actual work on the structure is to begin soon. President William B. McKinley, of the Illinois Traction system, the new General Manager, H. E. Chubbuck, Traffic Manager B. R. Stephens and several representatives of Canadian capital who financed the interurban system, completed the final tour of inspection Saturday when they went over the situation in St. Louis; contract for the bridge shows that the structure will cost about \$5,000,000 and that it is to be completed by January 1, 1910; when completed this will be the largest as well as the longest interurban bridge in the world.

Manchester, Ia.—The Board of Supervisors of Delaware county has decided on the building of a bridge over the Maquoketa river where it forms the county line, between the two counties, four miles south-east of Hopkinton; bridge is to be a 100-foot steel span and with steel joists and lattice rail; foundations are to be tubular iron piers, twenty-four feet high and forty-two inches in diameter; 20 foot approach on

steel piling with concrete backing will reach the main span at either end. Address Delaware County Auditor, Manchester.

New Orleans, La.—Commissioners New Orleans City Park Improvement Association have authorized executive committee to advertise for bids for proposed bridge to be constructed across Bayou St. John from Esplanade avenue to City Park entrance; structure to be of iron or steel and used exclusively for pedestrians and vehicles. C. Dittman, A. Glaudot, Jr., and others appointed committee. Paul Capdeville, President.

Crookston, Minn.—Bids will be received December 7, 10 a. m. for a steel bridge 212 feet long across the Red Lake River, according to specifications. J. E. Carroll, City Engineer.

St. Louis, Mo.—The War Department has declined to approve the plan for a municipal free bridge to be constructed by the city of St. Louis, Mo., across the Mississippi River at the foot of Chouteau street, about half a mile below the Eads bridge; plans prepared by the municipal engineers have been returned with suggestions of modifications; it is claimed that the bridge would interfere with navigation; it is estimated that the structure will cost about \$6,000,000.

Forsyth, Mont.—At the last election the proposition to build a \$40,000 steel wagon bridge across the Yellowstone River at Rosebud carried and the County Commissioners will soon take action to sell the bonds; bridge will connect the Northern Pacific and Milwaukee railways and will be used largely by stockmen of the Rosebud and Yellowstone valleys in the transportation of livestock.

Omaha, Neb.—The Park Board has decided to construct a concrete arch viaduct at Deer Park, Sixteenth street and the Boulevard; cost, about \$15,000.

Newark, N. J.—Plans for the construction of the Elwood Avenue bridge across the Passaic River to Kearny, N. J., are being prepared by the County Engineers of Essex and Hudson Counties.

Bridgehampton, L. I., N. Y.—A steel bridge, with concrete approaches, will be constructed over the Long Island railroad tracks, replacing the present wooden structure, for Mrs. Russell Sage.—J. R. Savage, Chief Engineer, Jamaica.

Long Island City, L. I., N. Y.—Work will commence soon on the construction of the steel frame of the viaduct which will be built across the Long Island railroad tracks in Thompson avenue, Long Island City.

Cincinnati, Ohio.—County Surveyor has been directed to prepare plans for building a viaduct over Duck Creek, to connect Norwood with Oakley and outlying territory; plans and specifications have been ordered for a new bridge and improvement of Fenton avenue, from Cleves pike to Harrison pike.—Frank Krung, Deputy County Auditor.

Pittsburg, Pa.—The Finance Committee of Councils has approved the ordinances submitting to a vote of the people propositions to issue \$4,000,000 of bonds for the acquirement of the bridges over the Allegheny River within the city limits, and \$1,800,000 of bonds for the erection of a new bridge over the same river at Eleventh street.

Greenville, S. C.—J. P. Goodwin, County Supervisor, will let contracts for building new wood bridges at the following sites: Hopkins bridge, December 2, 11 A.M.; Slaten's Mill bridge, December 2, 12 M.; Latimer's Mill bridge, December 3, 2 P.M.; Scott's Mill bridge, December 3, 10 A.M.

Austin, Tex.—Council is discussing a proposed agreement between the city and the railway company to erect a wooden bridge over Shoal Creek; matter was finally referred to the Ordinance Committee.

Brownsville, Tex.—The St. Louis, Brownsville and Mexico Railway has completed plans for the construction of an international bridge across the Rio Grande River at Brownsville.—J. N. Miller, Kingsville, Tex., General Manager.

Christoval, Texas.—Tom Green County Commissioners, San Angelo, Texas, will soon award contract for construction of concrete causeway at Christoval, across South Concho River.

Seattle, Wash.—Representatives of the Columbia & Puget Sound, the Washington & Oregon, the Chicago, Milwaukee & St. Paul and the Northern Pacific railway companies have agreed to build a temporary frame bridge, with a roadway of twenty-four feet and a sidewalk of eight feet, with a height of sixteen feet over First avenue South. The companies promise to finish the structure within forty days after the plans are approved by the City Engineering Department.

Waitsburg, Wash.—Council has rejected all bids for the Main street bridge; new bids have been asked.

Milwaukee, Wis.—Council will submit before the voters the question of issuing \$100,000 viaduct improvement bonds.

Milwaukee, Wis.—The Board of Public Works has estimated the cost of reinforcing and repairing the 16th street viaduct at \$65,000. C. J. Foetsch is City Engineer.

Sheboygan, Wis.—Plans are nearing completion for an \$80,000 bascule bridge to be erected across the river at Pennsylvania avenue.—Address City Clerk.

Revelstoke, B. C.—Government engineers are preparing plans for the new bridge to be built over the Columbia River at Revelstoke; estimated cost, \$40,000.

MISCELLANEOUS

Berkeley, Cal.—W. F. McClure, Town Engineer, has been instructed to prepare plans for a garbage crematory of 50 to 60 tons' capacity.—J. V. Mendenhall, Town Clerk.

Oakland, Cal.—Speedy settlement of condemnation suits brought by the city to gain possession of lands about Lake Merritt to be included in a general park and playground scheme is paving the way for immediate action on the part of the Board of Public Works; Board intends to reclaim that portion of the swamp lands between the Twelfth street dam and the Eighth street bridge, and it has been decided that the Oakland Traction Company be at once requested to comply with the law and the provisions of its franchise for a line over the bridge in the repairing of the Eighth street bridge.

San Francisco, Cal.—The Board of Supervisors has adopted plans and specifications submitted for a wharf along Illinois street, south of Santa Clara street, to cost \$104,000.

Hartford, Conn.—Chief Gunn has asked Police Commissioners for motorcycles for Hartford policemen.

New Haven, Conn.—Superintendent Amrhyn of Park Commissioners has stated that there would be serious trouble if the city did not get busy right away and not only extend Chestnut street, but also the sewer on that street, and build a bulkhead.

McCammon, Ida.—Trustees will sell bonds, \$3,000 for purchasing ground and building a City Hall and jail.—E. E. Jacobs, Chairman, Board of Trustees; A. E. Haines, Clerk.

Indianapolis, Ind.—Council has authorized a \$600,000 bond issue for the construction of City Hall.—Mayor Chas. A. Bookwater.

Indianapolis, Ind.—The Board of School Commissioners has instructed the Business Director to get estimates of the cost of placing and maintaining springing fountains in the public school yards.

Salem, Kan.—Special election will be held to vote bonds for purchase of the Salina Water Works Company; for purchase of the Electric Light and Gas Plant; also to build a \$40,000 city hall.

Scottsburg, Ky.—The Scottsburg Town Board has granted a franchise to C. W. Kelly, of this city, to build a water works, electric light plant and sewer system; work is to be begun in ninety days and completed ready for operation by January 1, 1910.

Baltimore, Md.—President Swann of Police Board has announced that Board of Estimate has no authority to cut out appropriation for new steam boat and for repairs to the two old boats.

Boston, Mass.—Residents of Commonwealth avenue are urging the planting of trees on that avenue in accordance with plans submitted; total work will cost \$23,656; 96 trees will have to be removed and new beds repaired; cost, \$14,795; reinforcement of soil around old trees, \$3,951, and regrading the whole surface, \$4,900.

Cambridge, Mass.—The Stockholders of the Boston Elevated Railway Company have voted to authorize the directors to issue not exceeding \$6,650,000 capital stock to finance construction and equipment of the Cambridge subway.

Lowell, Mass.—Citizens are discussing the having of a park on the farther side of the municipal buildings, the City Hall and the Public Library.

Manistee, Mich.—City is discussing matter of furnishing street signs.

Minneapolis, Minn.—Dan Brown, City Comptroller, has been directed to advertise for bids for bonds to the amount of \$67,000 for permanent improvements.

St. Paul, Minn.—The West Side is scheduled to have an important addition made to its park system by the condemnation of a tract of land comprising nearly twenty-one acres lying between Cherokee avenue and Annapolis streets; the Board of Park Commissioners have ordered Superintendent Frederick Nussbaumer to have the bandstand rebuilt at Terrace Park; fire destroyed the old stand last summer.

Virginia, Minn.—Park Board has requested Council to take some action in the purchase of the twenty-six lots in block 43 to be used for park purposes.

Kansas City, Mo.—Following is the recommendation submitted by Gus Pearson,

City Comptroller, to the special Council Committee on the proposition of voting bonds for municipal improvements: For the water works, \$1,500,000; parks, \$750,000; sewers, \$300,000; incineration plant, \$200,000; market improvements, \$100,000; municipal paving plant, \$80,000; house of correction, \$50,000; tuberculosis sanitarium, \$20,000; total, \$3,000,000.

Jersey City, N. J.—Baldwin Park will yet be turned into a place of public recreation, according to members of the Magnolia Improvement Association who have interested themselves in the project of having the city buy that tract of land.

Mount Holly, N. J.—Local taxpayers will be called upon to erect a jail.

Phillipsburg, N. J.—The Town Council is considering erection of municipal building; plans will be prepared at once.

Buffalo, N. Y.—Council has ordered report directing that an act be prepared authorizing bond issue for the establishment of a Municipal Hospital taken from the table.

Dansville, N. Y.—Highway Commissioner Charles Curry has presented Town Council with the following estimates: For construction and repair of bridges of five feet span or less, sluices, culverts, etc., \$650; also for repairing bridges of over five feet and painting \$500.

Geneva, N. Y.—The Board of Public Works is considering acquiring the remainder of the land necessary for the Lakeside Park site.

Newburgh, N. Y.—Council has approved the lease by the Playground Commission of the property in Newton street, owned by the Caroline Allen estate, which is intended to be used as a recreation centre and playground.

Rochester, N. Y.—Mayor Edgerton has urged construction of a subway at Walnut street; plan is to close both the Brown and Saxton street crossings; cost of the subway at Walnut street is estimated at about \$400,000, while one at Brown street would cost in the neighborhood of \$550,000, part of which the city would have to pay.

Rochester, N. Y.—City Engineer Fisher has received from the office of State Engineer Frederick Skene tentative plans for the barge canal harbor in the Genesee River; object in sending these plans is to get the opinion of the citizens of Rochester in regard to the matter, and there is nothing of a final nature in them; plans will be submitted to the Committee of the Chamber of Commerce appointed to look after the barge canal harbor developments in the interest of the city; proposed harbor is to extend from the Court street dam to Genesee Valley Park, and the depth will probably be 18 feet, although in the blueprints received from the State Engineer's office the depth is placed at but 12 feet.

Cincinnati, O.—A public ambulance service for Cincinnati, with a central exchange and the city divided into ambulance districts—that is the plan which the Federated Improvement Associations are working out, to be urged upon the City Council; the plan will be reported to the December meeting of the Federation and contemplates the division of the city into no less than four, and possibly six, districts; Dr. L. S. Colter is chairman of the committee, which also includes L. E. Kennedy, W. C. Culkins, W. D. James and John Dietz.

Cincinnati, O.—Board of Public Service has received plans for the buildings for Inwood Park, which include a shelter house, with a band stand, bathing pools, baths and other accessories, including a hall; cost in all \$35,000.

Cleveland, O.—The work of improving the new play-ground property on the West Side, the purchase of which has been authorized by the Council, will probably be commenced early in the spring.

Columbus, O.—Five firms have bids for the erection of garbage disposal plant; advertisements have been published for another part of the work; all contracts must be signed and machinery up this winter.

Dayton, O.—Chamber of Commerce is formulating a general plan for a park system in connection with the erection of a public comfort station.

Newton Falls, O.—Work on the engine house and water tank will be pushed as long as the weather will permit; plans are now being worked out.

Northfield, O.—Plans have been prepared by Architect F. R. Moore, 313 and 314 Everett Bldg., Akron, O., for a two-story Town Hall, 42x70 feet; cost, \$10,000.

Anadarko, Okla.—Dyke Ballanger, of this city, was the successful bidder for Anadarko's \$100,000 worth of municipal bonds; \$55,000 of the money will be used for the construction of a dam across the Washita River and make extensions on the city water and light plants; another \$15,000 will be used to construct a city hall.

Hobart, Okla.—W. W. Huff has purchased from T. F. Priles, Priles Park, situated one mile east of town, directly on the line of Hobart's proposed Interurban road to Cooperton; several thousand dollars will be

spent in improving the park, and it is expected by next season to make it the finest playground in western Oklahoma.

Portland, Ore.—Council will advertise for the purchase of \$500,000 park bonds.—Address City Comptroller.

Coaldale, Pa.—Coaldale Borough has voted a \$35,000 bonded indebtedness, the proceeds of which will be devoted to better streets, sewers and a municipal lighting plant.

Philadelphia, Pa.—The Delaware River Tunnel Company, at Harrisburg, and the Camden Tunnel Railroad, at Trenton, N. J., have been chartered to construct two tunnels, one from Second and Chestnut streets, the other from Second and Arch streets, the outlet of both being at Third street, Camden; promoters further plan the construction of an elevated road to the eastern boundary of Camden; cost of building the tunnels is estimated at \$7,000,000, and it is hoped to complete them within eighteen months.

Philadelphia, Pa.—Bids have been rejected by Director Grady, of the Department of Wharves, Docks and Ferries, for boring and driving test piles preliminary to construction of the projected new city pier at Dock street; bids have been re-advertised.

So. Bethlehem, Pa.—J. P. McFadden, of the Building Committee, has stated the money for the bitulithic street contract balance and for the erection of a house for the Good Will Fire Company can only be secured by ordinance and that the securing of such amounts will require the passage of two separate ordinances.

Lonsdale, Tenn.—The people of Lonsdale who favor improvements will, December 5, have an election in the municipality in regard to issuing \$150,000 bonds for street and water improvements.

McKenzie, Tenn.—The City Council has gone on record as favoring a bond issue for the town to the amount of \$20,000 for general improvements, and the authority will be asked of the coming Legislature; the matter will be submitted to a vote of the citizens, and it is thought that the same will carry; there seems to be an idea that the amount should be made \$40,000, so as to insure hard streets, lighting system, extension of water works and sewerage system; the McKenzie Industrial League will push the matter and try and bring it to a favorable end with the town.

Brady, Tex.—The question of issuing bonds to build jail will be submitted to a vote of the people.—Address County Auditor.

Dallas, Tex.—Residents of the Tenth Ward are urging better sewerage and the grading of streets.—R. C. Wallace, William Howell, M. Hartman, W. S. Collawn and J. S. Smith, Committee.

Houston, Tex.—Bids will be received January 7 for the purchase of the following bonds: \$225,000 drainage bonds, \$225,000 sewer bonds, \$150,000 wharf bonds, \$100,000 water extension bonds, all 4½ per cent. 20-30-year, optional.—Address H. B. Rice, Mayor.

Waco, Tex.—City is now receiving bids for construction of East Waco Levee.—J. B. Baker, Mayor.

Bakersfield, Vt.—Citizens will vote Dec. 3 on the erection of a new town house or the repair of the old.

Aberdeen, Wash.—Dabney hill, containing forty acres of land, which affords splendid views of the harbor, the city, the Olympic Mountains and the Pacific Ocean, fifteen miles away, has been purchased by Council for a park.

Seattle, Wash.—The Interlake Parents' Club will appeal to the Park Board to procure additional playgrounds if possible for the Interlake School.

Seattle, Wash.—Application for franchises to construct eight miles of subways in the business and residence districts have been made; applicants are Etlinger & Co., of London, and Charles A. DeBenditty, of Amsterdam; plans provide for a system to cost \$6,000,000 and to be completed in less than three years.

Seattle, Wash.—Mayor John F. Miller has succeeded in getting \$15,000 added to the proposed bond issue for permanent improvements for two additional police stations, one at some point north of Pike street, and the other at Ballard.

Tacoma, Wash.—Council has ordered H. J. McGregor, Commissioner of Public Works, to advertise for bids for 5,000 signs.

Wheeling, W. Va.—Council has ordered Chairman Beckett of the Committee, to purchase hose for the patrol house.

Monroe, Wis.—The \$20,000 city bond issue has been sold to Devet, Tremble & Co., of Chicago for a premium of \$1,290, there being twenty-four bidders for the bonds which are to be paid in the next twenty years.

Milwaukee, Wis.—Council Committee on Finance has recommended purchase for the second time of the proposed Bay View park site for \$59,000.

BIDS RECEIVED

Gadsden, Ala.—Bids were received for water works improvements from plans of Hazlehurst & Anderson, Candler Bldg., Atlanta, Ga., and the contract for the work has been awarded to the Corinth Engine and Boiler Works, per Jas. J. O'Rourke, Macheca Bldg., New Orleans, La., for about \$62,980; the bid of this company for this work was as follows: One 4,000,000-gallon vertical shaft motor-driven centrifugal pump, \$1,396 or \$1,100; two 120-h.p. return tubular boiler, also one feed pump for same with injector, \$2,358; removing old battery and setting two 120-h.p. boilers, \$825; one 3,000,000-gallon centrifugal pump, direct connected to steam turbine, \$1,595; one 50-kw. generator, direct connected to one 75-h.p. vertical automatic high-speed engine, switchboard, wiring, lights, etc., \$2,286; removing and resetting one 4,000,000-gallon horizontal compound reciprocating engine on foundations, \$1,460; construction of a circular brick chimney, 5 feet internal diameter and 110 feet high, \$2,450; erecting steam and electric-driven centrifugal pumps, including foundations and anchorage, \$1,420, making all steam and water connections within the building, including setting specials and valves and the covering of all steam pipes and fittings, \$1,282; repairs to pumping station, including removal of old chimney, plan "A," \$1,600; repairs to pumping station, plan "B," \$1,750; building filter house, \$3,900; furnishing a 500,000-gallon gravity filter tub, \$2,650 or \$3,375; taking down, cleaning and erecting 3 old filters, with complete connections and installation within filter house, \$2,250; constructing concrete clear-water basin, 25 feet diameter by 8 feet deep, \$2,100; constructing concrete coagulating basin, approximately 200x50 feet and 15 feet deep, \$12,600; taking up, cleaning and delivering 3,500 feet 4-inch pipe, 10 cents; taking up, cleaning and delivering 10,000 feet 6-inch pipe, 10 cents; delivering and laying approximately 50,400 linear feet c.-i. pipe from 4 to 16-inch, 14 cents to \$1.50; furnishing and connecting fire hydrants, also for supplying and connecting steam hydrants, \$1,922; furnishing valves, \$1,529; excavating 500 cubic yards earth, \$1; 100 cubic yards rock, \$3; erecting one alum house, tank connections and devices, \$425; furnishing and laying 400 linear feet vitri. drain pipe from 6 to 18-inch diameter, 80 cents to \$3.

The U. S. Cast Iron Pipe & Foundry Company, Chattanooga, Tenn., secured the contract for furnishing 50,400 feet c.-i. pipe from 4 to 16-inch diameter, approximately 1,250 tons, and 65 tons of special castings in connection with above work, for a total of \$26,272.

Montgomery, Ala.—Montgomery County Board of Revenue has awarded contract for construction of 1,260-foot viaduct approach to steel span over Catoma Creek; roadway, 16 feet; average height, about 10 feet; reinforced concrete throughout; cost, \$12,000.—J. T. Bullen, County Engineer.

Marianna, Ark.—Bids were received by E. W. King, clerk County Court, for constructing a steel highway bridge, 450 feet long, over L'Anguilla River at Marianna, as follows: Vincennes Bridge Company, Vincennes, Ind., \$10,879 (awarded contract); Magden & Sheeley, \$13,225; Midland Bridge Company, \$12,494; Morava Construction Company, \$11,270; Virginia Iron and Bridge Company, \$13,330; Illinois Iron and Steel Company, \$10,944; Joliet Iron Bridge Company, \$11,350; Central States Bridge Company, \$11,978; Kansas City Bridge Company, \$12,994; Southern Bridge Company, \$12,244; Continental Bridge Company, \$11,952; Monarch Construction Company, \$12,480; Missouri Steel Bridge Company, \$11,479.—H. N. Pharr, Consulting Engineer, 216 Randolph Bldg., Memphis, Tenn.

San Francisco, Cal.—Bids were received by the Board of Public Works for constructing the northern portion of the East Potrero intercepting sewer, an improvement which is to be paid for out of bond-issue funds; in all, eleven bids were received. The contract will go to either the Coast Improvement Company or to Hanrahan & Ehrhardt, whose bids are very close to \$80,000; some of the other bids were in excess of \$100,000.

The Harbor Board has awarded the contract for constructing pier 38 to the Healy-Tibbitts Construction Company for \$279,000, the lowest of eleven bids; the highest bid was \$357,500; the Harbor Commissioners consider the bid very reasonable, as the last contract given amounts to \$302,000, which is for pier 40, while pier 38 covers a large area, is taller, and its shed two feet higher than that of pier 40; the new pier is to be built near the Mall dock, and will be 650 feet in length and 120 feet in width. Work is to be commenced at once, and is to be completed in eight months.

The Seawall Commission has awarded the contract for the extension of the wharf on a line of Bluxome street to the Main

street wharf, a distance of 600 feet, to Gray Brothers, the amount involved being \$59,075, with a forfeiture penalty of \$50 a day if the work is not completed within eighty-five working days, the next highest bidder was Healey & Tibbitts, their price being \$61,984.

Denver, Col.—Contracts for completion of the Standley Dam have been awarded by the Denver Reservoir Irrigation Company to the Renssick-Quigley Company, of Kansas City, Mo.; the dam will irrigate 100,000 acres of fertile but semi-arid land near Denver.

Lamar, Col.—The Boulder Iron Works, Boulder, has been awarded the contract for building section 1 of the Larimer water works for \$11,733.—C. W. Heaton, Clerk.

Hartford, Conn.—Highway Commissioner James H. MacDonald has awarded contracts for work on the highways as follows:

Town of Orange.—To C. W. Blakeslee & Sons for 16,550 feet of macadam on the New Haven and Derby turnpike for \$1.40½ per linear foot for macadam; \$1.76 for telford; and \$5.50 per cubic yard for masonry.

Town of Woodbridge.—To C. W. Blakeslee & Sons for 1,330 feet of macadam on the Seymour stage road at \$1.65 per linear foot.

New Haven City.—To Frank Brazos for 1,930 feet of macadam on Orchard street at 51 cents per square yard for macadam, and 50 cents per square yard for Belgian block gutters.

Orange, Conn.—The contract for constructing 17,550 linear feet of macadam and telford road in Orange has been awarded to C. W. Blakeslee & Sons, of New Haven, at \$1.40½ per linear foot for macadam and \$1.76 per linear foot for telford.

Wilmington, Del.—The following are the bids received by the Board of Water Commissioners for the construction of a covered, slow sand filtration plant, together with filtered water reservoir, filters and washing apparatus and other appurtenances—(a) filters and filtered water reservoir; (b) pipes, valves, installation, etc.; (c) filter sand and gravel; (d) washing machine; (e) grand total; (f) time of completion:

Coleman Brothers, (a) \$165,000, (b) \$25,000, (c) \$29,000, (d) \$38,500, (e) \$257,500, (f) December 1, 1909; Ley Construction Company, (a) \$171,490, (b) \$26,800, (c) \$31,275, (d) \$36,750, (e) \$266,315, (f) June 1, 1910; Norcross & Edmonds, (a) \$182,500, (b) \$21,600, (c) \$40,250, (d) \$55,000, (e) \$279,350, (f) June 1, 1910; Millard Construction Company, (a) \$187,650, (b) \$25,500, (c) \$33,000, (d) \$55,000, (e) \$281,150, (f) December 1, 1909; MacArthur Brothers, (a) \$195,000, (b) \$27,000, (c) \$32,000, (d) \$35,000, (e) \$289,000, (f) February 1, 1910; A. S. Reed & Brothers Company, (a) \$194,592, (b) \$27,978, (c) \$28,277, (d) \$38,500, (e) \$289,347, (f) July 1, 1910; William Steel & Sons Company, (a) \$192,858, (b) \$30,000, (c) \$30,000, (d) \$37,000, (e) \$289,858, (f) December 31, 1909; John A. Kelly Co., (a) \$187,800, (b) \$28,000, (c) \$38,600, (d) \$35,500, (e) \$289,900, (f) January 1, 1910; Manufacturing Contracting Co., (a) \$188,059, (b) \$29,037, (c) \$40,935, (d) \$38,500, (e) \$296,531, (f) June 1, 1910; Harrigan & Co., (a) \$198,200, (b) \$26,300, (c) \$35,607, (d) \$37,750, (e) \$297,857, (f) June 30, 1910; Ferro-Concrete Contruction Company, (a) \$217,250, (b) \$34,500, (c) \$29,400, (d) \$36,000, (e) \$317,150, (f) October 31, 1909; David Peoples, (a) \$228,500, (b) \$39,000, (c) \$42,300, (d) \$35,000, (e) \$344,800, (f) June 1, 1910; Bunting-Bull Company, (a) \$236,000, (b) \$33,000, (c) \$40,000, (d) \$45,000, (e) \$354,000, (f) May 1, 1910; Engineer's estimate, (a) \$177,675, (b) \$26,607, (c) \$25,184, (d) \$38,500, (e) \$267,966, (f) December 1, 1909. John A. Kienle, Chief Engineer, will be in direct charge and will be assisted by J. Hunt Holl, Assistant Engineer.—B. F. Shaw, President of Board.

Washington, D. C.—Warren F. Brenizer Company, city, has secured the contract for constructing sewers in Conduit road at the following bid: 7,500 cubic yards excavation, 63 cents; 65 cubic yards sewer brick masonry, \$14; 2,050 linear feet 24-inch terra cotta pipe sewer, \$1.22; 1,250 linear feet 21-inch, \$1, and 1,750 18-inch, 89 cents; total, \$10,738. Totals of other bids: Jas. A. Coyle, \$12,069; E. G. Gummel, \$12,242; R. J. Beall Construction Company, \$13,650, and Geo. Hyman, \$14,378 (bidders all of Washington).—Asa E. Phillips, Superintendent of Sewers.

The following are the totals of bids opened November 16 by the Commissioners, D. C., for constructing sewers—(a) Sect. D of East Side intercepting sewer, boundary to Brookland, (b) trunk sewer in Rock Creek Church road, (c) trunk sewer in Franklin street (bidders all of Washington): Warren F. Brenizer Construction Company, (a) \$12,476, (b) \$5,611, (c) \$4,343; Lyon Brothers, (a) \$13,785; E. G. Gummel, (a) \$14,312, (b) \$6,609, (c) \$4,890; R. J. Beall Construction Company, (b) \$6,050; Geo. Hyman, (c) \$3,701.—Asa S. Phillips, Superintendent of Sewers.

Jacksonville, Fla.—The Duval County Commissioners have awarded contract to Converse Bridge Company, Chattanooga,

Tenn., at \$5,729 for construction of steel bridge at Talleyrand avenue.

Pensacola, Fla.—The following are the bids received by the Bureau of Yards and Docks, Navy Department, Washington, D. C., for a water system at the Navy Yard, Pensacola: Central Metal and Supply Company, Baltimore, Md., \$10,995; McCay Engineering Company, Baltimore, Md., \$9,777; Newport Plumbing and Heating Company, Newport News, Va., \$9,938; Henry Monk, Ft. Barrancas, Fla., \$10,215; D'Olier Engineering Company, Philadelphia, Pa., \$9,726 and \$9,876, bidder's plans, and Jos. L. Swergard & Co., Philadelphia, Pa., \$9,989.

Pensacola, Fla.—A new bridge to cost \$2,873.21, is to be constructed across Bayou Chico, the contract having been awarded by the Board of County Commissioners, to the C. H. Turner Construction Company, the bid of this firm being the lowest. The bridge is to be constructed of heavy timber with creosoted piling.

The various bidders and their respective proposals were as follows: Jno. Cameron, \$3,143.00; F. M. Daniels, \$3,423.00; Henry Monk, \$3,250.00; P. J. Cushion, \$2,894.57; C. H. Turner Construction Company, \$2,873.21; Anderson & Stearns, \$3,773; A. Blair, \$3,750.

Augusta, Ga.—City has awarded contract to John H. McKenzie's Sons, city, at \$20,880, for construction of stone piers upon which to erect steel drawbridge at Center street; total cost of structure, about \$65,880.

Silvis, Ill.—The contract for constructing sewers has been awarded to C. A. Berglund, 1417 Fifth avenue, Moline, for \$12,550.

Elkhart, Ind.—The Board of Public Works has let the contract for the paving with asphalt of South Main street from Prairie street to Lusher avenue, the city limits, to the Andrews Construction Company of Hamilton, O., whose bid totaled \$45,109, or \$117.95 less than the City Engineer's estimate; the only other bid was that of the Western Construction Company of La Fayette, whose total was \$48,196.17; the Andrews bid on the asphalt paving proper was \$1.98 per square yard as against \$2.08 by its competitor.

Hammond, Ind.—The Board of Public Works has awarded the contract for the Pine street sewer to O'Shea and Shea, city, at \$1.35 a linear foot and \$5 for house connections.

Indianapolis, Ind.—Bids were received by the Board of Public Works for the construction of a combination storm and sanitary sewer in Layman & Carey's Irvington Park addition, between Emerson avenue and Wallace street, from New York to Michigan street, to cost approximately \$15,000. The bids received were as follows: Manley, O'Donnell & Co., \$1.69 a linear foot; American Construction Company, \$1.70; William Yates & Co., \$1.72; Henry Maag, \$1.74; R. F. Pickens, \$1.79; Schauer & Roessinger, \$1.80; Sheehan Construction Company, \$1.82, and John Jenkins, \$1.87½.

The following were the low bids received for local sewers: In Thirty-third street, Manley O'Donnell & Co., 74 cents; in Riley avenue, from Washington to Michigan: Manley, O'Donnell & Co., \$1.69.

Indianapolis, Ind.—The following are the low bids received by the Board of Public Works: Local sewer in Davidson street, from Washington street, 415 feet south: Sheehan Construction Company, \$1.27; first alley west of East street, from first alley south of South street, 75 feet south of first alley south of South street, paving: George W. McCray, \$3; first alley west of East street, from point 75 feet south of first alley south to Stevens place, paving with Indiana block, J. W. Abbott, \$1.64.—Blaine H. Miller, City Engineer.

Mishawaka, Ind.—Councilman F. W. Kuss has reported to Council that the Water Works Committee has employed Mr. Keasey to sink a 6-inch test well 60 feet deep at the rate of \$2.25 per foot, the well to be on the north side leased by the city for park purposes between Cedar street and the north race, in an attempt to get pure water.

Valparaiso, Ind.—McGillicuddy & Leicester have been awarded a contract for laying 16,000 square yards brick pavement on a 6-inch stone foundation, 2-inch sand cushion, at \$1.38 per square yard; also 1,000 lin. feet concrete curbing, at 44 cents. Other bids were: H. C. Finley, \$1.42; Moellering Construction Company, \$1.44; Conover & Taber, \$1.42½; W. B. Hutchinson, Jr., \$1.46; Fred Hoffman, \$1.48. C. W. Dickover secured a contract for laying 10,000 square feet cement sidewalk, at 10½ cents per square foot.—Charles D. Jones, City Clerk.

Burlington, Ia.—Young & Buescher have secured the contract, at \$1.33 per linear foot, for the construction of a sewer in Washington street, and at 60 cents per cubic yard for grading and \$1.73 per square yard for paving in alley No. 5.

Charles City, Ia.—Bids have been received by the Board of Supervisors for a steel concrete bridge across Cedar River, but the letting of contract has been postponed until January; the following contractors submitted bids: Bartlett & Kling, Cedar Rapids; Marsh Bridge Company, Des Moines; Russell Brothers, Waverly; Western Concrete Bridge Company, Chicago, Ill.; Cook Construction Company, Des Moines; N. M. Stark & Co., Des Moines.

Council Bluffs, Ia.—C. Hafer has been awarded a sub-contract by E. A. Wickham for furnishing 6, 8, 10, 12 and 15-inch sewer pipe for contracts held by him.

Pittsburg, Kan.—The bid of H. Nesch for repaving Broadway from Second street to Seventh, at \$1.04 a square yard, has been received; it provided that he be permitted to use the under course of bricks now on the street, but as the City Engineer's specification was for a double layer all through, Mr. Nesch's bid was held up until the next meeting of the Council.

Wellington, Kan.—The contract for constructing sewers in District No. 3 has been awarded to E. M. Ely, city, for \$18,400.—A. B. Cheever, City Clerk.

New Orleans, La.—Council has passed ordinances accepting the bid of the Barber Asphalt Company for paving with asphalt Broadway street, from St. Charles Avenue to Jeanette; also for paving with asphalt Hurst street, from Joseph to Octavia; also for paving with asphalt Atlanta street, from Peters avenue to Octavia, accepting the bid of W. J. Commerford for paving with vitrified brick Howard street, from Bloomingdale line to Calhoun street; accepting the bid of C. Hyland for repaving with square granite block Magazine street, from Julia to St. Joseph.

The Finance Commission has received bids and referred them to Capt. Wm. J. Hardee, City Engineer, for paving streets as follows: With asphalt, South Solomon street, from Canal to Baudin; the Barber Asphalt Company was the only bidder; asphalt, Carondelet street, from Polymnia to Felicite; the Barber Asphalt Company; asphalt, Scott street, from Tulane avenue to St. Louis street, the Barber Asphalt Company and W. H. Douglas; granite, Lopez street, from Poydras to St. Louis, the Rudolph S. Blome Company.

New Orleans, La.—The following bids were received for paving General Taylor street with chert: Grasser Construction Company, Hennen Bldg., \$33,948; W. J. Comerford, \$21,088, and Elita Contracting Company, \$21,025.

New Orleans, La.—The bid of Joseph Hingle, Home Place, La., has been recommended for acceptance, at 29½ cents for construction of 37,000 cubic yards of Daisy Levee, Lake Borgne Levee District.—H. Burgess, Captain, Engineers, 3338 St. Charles avenue.

The State Board of Engineers awarded contract to W. G. Burt & Co., city, for construction of Westdale levee, containing about 25,000 cubic yards of earth, at 11½ cents per cubic yard, and to McDade Bros., for Murrell levee, containing about 35,000 cubic yards of earth, at \$20.95 cents per cubic yard.

The Orleans Levee Board awarded contract to C. W. Wood, city, at \$1.15 per cubic yard, for rebuilding levee between Alabo street and St. Maurice avenue, embracing about 15,000 cubic yards.

Baltimore, Md.—The Board of Awards has purchased from the Cleveland Lighting Company 1,500 boulevard street lamps at \$4.75 apiece; this was the lowest bid received; Eugene E. Newbold, president of the American Lighting Company, which has the contract for maintaining and furnishing the equipment for the city's system, is vice-president of the Cleveland company; the other bidder was the Miner Company, at \$5.50 a lamp.

Lawrence, Mass.—At a special meeting of the Water Board the Lynchburg Foundry Company of New York was awarded the contract to furnish 368 tons of cast iron pipe after January 1, 1909, as its bid, \$23.45 per net ton was the lowest out of 10 competitors. The pipe to be furnished is specified as follows: Five hundred feet 4-inch c. i. water pipe, 260 pounds per length; 4,000 feet 6-inch, 426 pounds length; 8,000 feet 8-inch, 624 pounds length; 1,800 feet 12-inch, 1,100 pounds length. On Standard B. & S. special 2.45 per 100 pounds.

The following were the firms that competed and their bids: M. J. Drummond & Co., \$25.00 per net ton; Warren Pipe & Foundry Co., \$24.40 per net ton; D. R. Wood & Co., \$24.65 per net ton; U. S. Cast Iron Pipe & Foundry Co., \$23.60 per net ton; Donaldson Iron Co., \$23.68 per net ton; John Fox & Co., \$23.70 per net ton; Builders' Iron Foundry, \$26.20 per net ton; Lynchburg Foundry Co., \$23.45 per net ton; Charles Miller & Son Co., \$24.50 per net ton; Riley Bros., \$24.70 per net ton.

A 1,000 pound bell for the new engine house in West Centralville has been ordered through the Purchasing Agent's of-

face; Meneely Co. of Troy, N. Y., will furnish the bell, and it will be installed by that company; it was this company that furnished the famous chimneys to Trinity and also Memorial church in Fairhaven, built by H. Rogers of the Standard Oil company as a monument to his mother.

Manchester, Mass.—The Water Board has awarded the contract to George S. Sinnicks, at \$11,000 for the construction of the pumping station at Gravel Pond; the station will be of brick and concrete, with slate roof, copper gutters and granolithic floors.

New Bradford, Mass.—The Water Board has voted to accept the bid of the United States Cast Iron Pipe & Foundry Company of \$12,448.60, this being the lowest of five bids for supplying the Department with material for the spring delivery; those of the board who were present were L. R. Washburn, W. E. Smith and W. H. Pitnam.

The following proposals were received, opened and read:

Warren Foundry & Machine Co., 170 Broadway, New York:
511 net tons 36-inch to 6-inch sized pipe at \$23.75.....\$12,136.25
18 net tons special castings at \$50..... 900.00

Total.....\$13,036.25
United States Cast Iron Pipe & Foundry Co., 71 Broadway, New York:
511 net tons 36-inch to 6-inch sized pipe at \$22.60.....\$11,548.60
18 net tons special castings at \$50..... 900.00

Total.....\$12,448.60
Camden Iron Works, 400 Chestnut Street Philadelphia, Pa.:
511 net tons 36-inch to 6-inch sized pipe at \$23.90.....\$12,212.90
18 net tons special castings at \$50..... 900.00

Total.....\$13,112.90

Charles Millar & Son Co., Utica, N. Y.:
511 net tons 36-inch to 6-inch sized pipe at \$25.00.....\$13,030.50
18 tons special castings at \$50.00..... 900.00

Total.....\$13,930.50
Lynchburg Foundry Co., Lynchburg, Va.:
511 net tons 36-inch to 6-inch sized pipe at \$23.60.....\$12,059.60
18 net tons special castings at \$48..... 864.00

Total.....\$12,923.60
Grand Rapids, Mich.—J. P. Rusche, 4 Portsmouth Terrace, Grand Rapids, has been awarded contract by the Board of Public Works for the construction of the sewage pumping station on the west side ditch sewer, at \$9,300.—L. W. Anderson, City Engineer.

Only four bids were received by the Board of Public Works recently for the new 12,000,000-gallon water works pump as a result of the readvertisement that was ordered upon recommendation of Mayor Ellis, and which was concurred in by the Ways and Means Committee of Council, which also recommended that the former bids received by the Board be rejected and that new bids be received with a view of securing lower prices on the big machine. As a result of this plan the Board had the satisfaction of seeing the Wilson-Snyder Company's bid—the former lowest bidder—reduced \$250 and only \$1,250 below the first accepted bid; the Wilson-Snyder Company's figures on the "A" plan were the lowest of any received; the Allis-Chalmers Company, of Milwaukee, which had made a private offer of \$59,700 to Mayor Ellis and the Board after the Mayor's recent conference with the President of the Wisconsin firm, refused to submit a bid at the second letting; the R. D. Wood Company and the Wisconsin Engine Company informed the Board by letter that they did not believe the city was acting in an honorable manner in calling for second bids, and also refused to again submit figures for the new pump.

The bids follow:

The last bids: Platt Iron Works, (a) \$66,000, (b) \$66,500; Wm. Todd Company, (a) \$64,700, (b) \$65,200; Bethlehem Steel Company, (a) \$66,000, (b) \$67,000; Wilson-Snyder Company, (a) \$63,750, (b) \$66,750. The first bids: Platt Iron Works, \$64,000; William Todd Company, \$72,000; Bethlehem Steel Company, \$114,000; Wilson-Snyder Company, \$65,000; R. D. Wood, \$67,000; Hoover-Owens, \$92,000; Wisconsin Engine Company, \$68,800; Holly Manufacturing Company, \$89,700; Allis-Chalmers Company, \$67,500.

Menominee, Mich.—The Menominee and Marinette Light and Traction Company has let the following contracts for the power plant at Grand Rapids: For 4,250 horsepower in water turbines and 4 Lombard automatic governors, to the Globe Iron Works, Dayton, O., and the generators, transformers and switchboards to be used in the station, to the Westinghouse Electric and Manufacturing Company, Pittsburgh, Pa.

Detroit, Mich.—Contract for constructing the part of Section 4, Waterman avenue sewer, has been awarded to Langley & Jeaynes, city, for \$11,925.—W. W. Magee, Secretary, Board of Public Works.

Cokato, Minn.—The contract for drilling a deep well has been let to E. R. Bristol, at \$5 per foot complete.

Deer River, Minn.—W. D. Lowell, of Minneapolis, has been awarded the contract for laying six blocks of water mains.

New Ulm, Minn.—Ernest Wicherski, City Clerk, states that the following are the bids opened November 16 for furnishing about 5,508 feet 14 to 4-inch c.-i. pipe, hydrants, valves, etc., for pipe line on Center street to proposed reservoir: Grebe & Emmerich, New Ulm, \$14,655; Cuddy-Cavanaugh Company, New Ulm, \$10,350.51 (awarded contract); Pastoret & Lunz, Duluth, \$12,877; Fairbanks, Morse & Co., St. Paul, \$14,198; W. D. Lovell, Minneapolis, \$11,585.

Virginia, Minn.—Council has accepted the bid of the Austin-Western Company to furnish the city a street sweeper for \$236.50, also this company's bid for a road roller 3½ tons, at the price of \$350; the Studebaker Company submitted a bid to furnish a street sweeper for the sum of \$226.30, and a larger one for \$279.86, but as this sweeper did not meet with the requirements the bid was rejected.

St. Louis, Mo.—The Missouri Valley Bridge Company, of Leavenworth, has closed a contract for furnishing and erecting the steel work for a new bridge across the Missouri River; this is what is known as the McKinley bridge; McKinley, of Illinois, being the promoter of the company and will be an 8,000-ton bridge, will be 2,500 feet long and will stand 90 feet above water mark; the concern also has the contract for building the piers.

Jersey City, N. J.—Bids have been received by the Board of Street and Water Commissioners for delivering and laying c.-i. water pipe, in all 13,000 linear feet, 20 to 6-inch pipe, about 1,000 cubic yards rock excavation, and the contract has been awarded to Bernard Gannon, 41 Graham street, Jersey City, at 93 per cent.—George T. Bouton, Clerk.

Phillipsburg, N. J.—The Town Council has awarded the contract for paving with brick a portion of Heckman street to the Bushkill Quarry and Construction Company, at \$2.40 per square yard.

Plainfield, N. J.—Council has accepted Alexander Milne's bid of \$10,750 for the construction of the East End fire house; this will leave \$4,250 with which to equip the house, allowing \$2,200 for a combination chemical and hose wagon, \$700 for a pair of horses and the balance for hose, grading, etc.

Albany, N. Y.—Butler Brothers and Hoff Company have been awarded a contract for barge canal contract No. 41, at \$281,330, more than \$100,000 below the Engineer's estimate.

Contracts have been awarded as follows for improving State highways, bids for which were opened November 13, by Fred Skene, State Engineer: Road No. 725, Section 2, Chemung County, 9 miles, to Casey & Murray, of Rochester, \$14,112; Road No. 734, Potsdam-Parishville, Section 1, St. Lawrence County, 5.12 miles, Spuyten Duyvil Construction Company, New York City, \$36,324; Road No. 747, Delhi-Bloomville road, Delaware County, 5.91 miles, John Harrigan of New York City, \$55,635; Road No. 795, Jeffersonville-Kenosha Lake-Fosterdale road, in Sullivan County, 6.2 miles, to Bellew & Merritt, of Tuckahoe, \$49,904.

The Newport Construction Company, of Newport, has secured the contract to construct State Road No. 444, the Riverside drive, in Broome County, a distance of 1.14 miles; the bid as submitted November 9 to State Engineer is \$11,565 for syenite and \$12,186 for trap rock.

Canajoharie, N. Y.—The contract for electric conduit construction in this village, involving about 900 feet of conduit and the necessary appurtenances, for which bids were received November 23, has been awarded to F. W. Schuyler, Fort Plain, N. Y., at \$2,721.92.—C. E. Perry, Engineer.

Geneva, N. Y.—Bids for the construction of a fire vault were opened as follows: W. H. Frantz, \$298.50; Samuel Nagle, \$303; A. B. Morrison, \$260; the contract was awarded to Mr. Morrison.

Newburgh, N. Y.—The Park Commissioners awarded to George Sykes of New York City the contract for a tool and work shop in Downing Park; Mr. Sykes is also the contractor for the construction of the museum building at Washington's Headquarters, work upon which is now in progress.

Niagara Falls, N. Y.—N. Neoff was awarded the contract to lay a water main on Ferry avenue between Eighteenth and Twentieth streets, at his bid of \$429.10; W. A. Shepard & Co. were found within

the estimate contract on Fourteenth street between Ferry and Walnut avenues and they got the contract.

Charlotte, N. C.—The Westinghouse Electric Company, Pittsburgh, Pa., has contract for transformers for the Southern Power Company, which will have an aggregate capacity of 93,000 kw.

East Monbo (not a postoffice), N. C.—Turner Mills Company, Statesville, has awarded contract to Ordway & Sons Company, Winston-Salem, N. C., to construct concrete reservoir at East Monbo for fire protection; walls will extend 50 feet above roof of building and reservoir will have capacity of 200,000 gallons.

Fargo, N. D.—Contract for constructing two 12-inch lateral sewers, aggregating 2,790 feet, has been let to James Kennedy, and 1,230 feet to G. W. Haggert.—N. C. Morgan, City Auditor.

Akron, O.—The Board of Public Service has decided to purchase a 600-gallon street sprinkler from the Studebaker Bros. Wagon Co. at an expense of \$322.30.

Cincinnati, O.—The Board of Public Service has awarded the contract for reinforcement and other structural work in connection with repairs to Liberty street viaduct to Grainger & Co., for about \$25,000.

Coal Grove, O.—The following bids were received by the Village Council for paving Main street: Fettersburg Fire Brick Company, \$17,450; Ironton Construction Company, \$20,138, and F. J. Horschel, \$20,015.

Columbus, O.—The Board of Service has awarded three contracts for building portions of the garbage disposal plant; C. O. Bartlett and Snow Company, of Cleveland, were awarded the contract for dryers at their bid of \$12,650; the Kutztown Company, of Philadelphia, was awarded two contracts for digestors, grease removers, etc., one for \$38,000 and one for \$94,000; the amount set aside for the completion of the plant is \$290,000, and several months ago bids were advertised for to include the entire plant; the bids received were far in excess of the amount on hand; then the Service Board decided to let contracts separately; one of the considerations of the contracts is that the work be started at once.

Dayton, O.—The city Engineering Department has finished the task of tabulating the bids on the three storm water sewer jobs; on the sewer through the St. Mary's campus, Shafer & Dill are low at \$736; W. H. Boyd is low on the sewer in Stewart street, at \$1,346.20, and Paul & Kershner are the lowest bidders on the sewer in Caldwell street, their bid being \$5,086.25.

Hartwell, O.—Bids were received for the construction of sewers and a sewage disposal plant from plans of the Riggs & Sherman Company, of Toledo, and the lowest bid received was that of Emanuel L. Schneider, of Ann Arbor, Mich., at the following bid: 4-inch soft tile laid, per linear foot, 5 cents; 6-inch soft tile laid, 8 cents; vitrified sewer pipe laid—37,002 linear feet 8-inch, 13 cents; 3,630 linear feet 10-inch, 22 cents; 1,475 linear feet 12-inch, 29 cents; 1,750 linear feet 15-inch, 40 cents; 1,270 linear feet 18-inch, 50 cents. Excavation—22,628 linear feet, under 8 feet, 45 cents; 13,360 linear feet 8 to 10 feet, 45 cents; 3,200 linear feet, 10 to 12 feet, 60 cents; 2,809 linear feet, 12 to 14 feet, 60 cents; 2,360 linear feet, 14 to 16 feet, \$1; 710 linear feet, 16 to 18 feet, \$1.75; 15 linear feet, 18 to 20 feet, \$2.50; 15 linear feet, 20 to 22 feet, \$2.50; 30 linear feet, 22 to 24 feet, \$2.50; 30 linear feet, 22 to 24 feet, \$2.50; 24 to 26 feet, \$2.50; 14 flush tanks, each \$60; 106 manholes, each \$28; 8 drop manholes, each, \$38; 1 interception manhole, \$75; 1 18-inch sluice gate, \$90; cast-iron pipe, per ton laid, \$50; 15 cubic yards concrete, \$5; timber in foundation, per 1,000 feet, \$30; excavation per cubic yard, 40 cents; rock excavation, per cubic yard, \$3.50; pump well, machinery and tanks, 1 filter bed and drainage (lump sum), \$12,751; total for sewer, \$35,276.11; total for sewage disposal, \$12,751; grand total, \$48,027. Totals of other bids received, including sewers and sewage disposal: Evan Evans, 1226 Ida street, Cincinnati, \$48,498; F. M. Benner & Co., Marion, Ind., \$49,784; Hannon & Sieverling, Springfield, \$51,745; Bosler & Flynn, James Bldg., Chattanooga, Tenn., \$53,182; Pease, Buzzart Construction Company, Bradford Bldg., Indianapolis, Ind., \$53,218; Walter S. Hollaender, 1330 Race street Cincinnati, \$53,388; C. T. McCracken & Co., 214 Schultz Bldg., Columbus, \$53,790; Thos. P. Strack, Goodall Bldg., Cincinnati, \$57,361; Wm. H. Boyd, Reibold Bldg., Dayton, \$57,935; T. J. Backus Construction Company, Reibold Bldg., Dayton, \$62,834.

Springfield, O.—Gould & Wright, of Toledo, were awarded contract for constructing sewers at \$16,631.

Bernard Higgins was awarded the contract for the construction of two sewers.

Toledo, O.—A. Bentley & Sons were awarded the contract for the construction of the filter plant pumping station; cost, \$39,658.

West Chester, Pa.—Bids were received by the Valley Forge Commission, at the office of J. O. Clarke, Engineer, Crozer Building, Philadelphia, for grading and appurtenant work, including demolishing

Bids of Warner-Quinlan, Barber Asphalt and Cleveland-Trinidad Co's withdrawn.

buildings, grading, telford road, drains, walls, paved gutters, etc., along Valley Creek, and the contract has been awarded to Thomas Meehan & Sons, Inc., of Mt. Airy, Philadelphia; cost, about \$7,000.

York, Pa.—The Barber Asphalt Company, of New York City, the only firm to submit a bid for the paving of East Market street, in the block between Queen and Pine, was awarded the contract at \$1.97 per square yard, at a special meeting of the Highway Committee, and the action will probably be ratified by the Council; one other firm sent in a bid, but withdrew it upon learning that the York Railways Company, which is required to pave between its tracks and for a certain distance on each side, had already awarded its contract to the Barber Company; and this company, which did all other asphalt paving in the city, has its plant here ready for operation.

Newberry, S. C.—City has awarded contract to Southern Paving Construction Company, Chattanooga, Tenn., at \$2.50 per square yard for paving Calwell and Main streets with vitrified brick on concrete base; entire area to be paved, 1,200 square yards.

Lenoir City, Tenn.—City has awarded contract to James Kennedy, Thomas Moreland and associates, city, to furnish macadam for use in concrete work on sidewalks; city will probably expend about \$20,000 for sidewalk paving.

Nashville, Tenn.—J. H. Fall & Co., city, are low bidders, at \$37,383, for furnishing iron pipe for the Water Department; the contract calls for 164 tons of 8-inch, 314 tons of 12-inch and 1,350 tons of 6-inch pipe.—W. W. Southgate, City Engineer.

Dallas, Tex.—Police and Fire Commissioner Seay submitted the following report, which was adopted by the Mayor and Board of Commissioners, upon bids for furnishing 30 miles of wire for use in installing the Gamewell police signal system, the following bids being received: Electric Appliance Company, \$8.25 per 100 pounds; Central Telephone and Electric Company, \$8 per 100

pounds, with 1 per cent. discount for cash; Western Electric Company, \$17.99 per mile; Hobson Electric Company submitted two bids; the first bid was for two grades of wire, one at \$8 per 100 pounds, the other at \$9 per 100 pounds; the second bid was submitted after the bids had been opened, and on the \$8 grade they submitted an offer of \$7.85, and on the \$9 grade, \$8.85, with an allowance of a discount of 1 per cent. for cash; inasmuch as the last bid was submitted after the other bids had been opened it was not considered; the bids were tabulated by Henry Garrett, Superintendent of the Fire Alarm System, and he recommends the acceptance of the bid of the Central Telephone and Electric Company as the lowest and best, and recommends that the bid be accepted as the lowest and best bid, and that the city avail itself of the 1 per cent. cash discount.

Bids on furnishing sluice gates and valves for the new water works pumping station were opened by the Commission and referred to Mr. Sullivan, who will turn them over to Chief Engineer Bassett for comparison and investigation; the total cost as indicated by the bids received will be close to \$4,000; the city asked bids on two sluice gates, 30 by 60 feet high, two 30-inch valves low pressure, four 24-inch gate valves high pressure, and one 8-inch gate valve low pressure; there were about 15 bids, but some of them were not regular and were not reduced to a tabulation; the bids as tabulated by Mr. Nelms are as follows: Crane Company, \$4,274.76, complete; J. B. Clow, \$4,961.90, complete; R. D. Wood & Co., \$4,070, no sluice gates; Coffin Valve Company, \$4,757, complete; Darling Pump and Manufacturing Company, \$3,084.05, no sluice gate or 30-inch valve; Rensselaer Manufacturing Company, \$4,401.25, complete; John Simmons Company, \$3,766.85, no sluice gates; Fairbanks Company, \$2,858.15, no sluice gates; Ludlow Valve Company, \$5,078.40, complete; Pittsburg Manufacturing Company, \$5,027.20, complete; Chapman Valve Company, \$3,898, complete; Roe-

Stephens Manufacturing Company, \$4,531.35, complete.

Bids for the construction of Deere Park 8 and 10-inch sewer, nearly a mile long, were opened and referred, the contractors to supply all materials: George W. Denison, \$3,500; Dallas Home Improvement Company, \$3,444; George S. Vivian, \$4,309; C. W. Olcott, \$2,936; bids on a like work for Routh street were as follows: Dallas Home Improvement Company, \$2,445; Geo. S. Vivian, \$2,674; C. W. Olcott, \$1,891; Geo. W. Ennison, \$2,998; Dallas Lime and Gravel Company, 2,154.

City has awarded contract to Texas Bitulithic Company, Carleton H. Wells, General Manager, Dallas, Tex., for paving North Texas street, at \$1.87½ per square yard; city will also pave the boulevard and East Rio Grande street.

El Paso, Tex.—The El Paso County Commissioners awarded contract to El Paso Bridge & Iron Company, city, at \$5,950, for construction of steel bridges across Rio Grande at Courchesne and Canutillo; six spans, each 40 feet long.

Danville, Va.—The contract for additional equipment to be installed in the municipal electric light plant has been awarded to the Allis-Chalmers Company, Milwaukee, Wis.; it includes a boiler, 500-kw. turbo-generator set, etc.; an appropriation of \$22,000 has been made for improvements to the plant;—F. Talbot, Superintendent, Water, Gas and Electric Light Department.

Lynchburg, Va.—The Owego Bridge Company, Owego, N. Y., Southern office, 53 Benbow Arcade, Greensboro, N. C., the low bidder, has been awarded contract for repairs to Rivermont viaduct; work to consist of placing stringers under car tracks, about 100 tons, lacing top chords, etc.—L. Moseley, Southern Agent.

Norfolk, Va.—The Board of Control has placed an order for 50,000 vitrified brick with M. J. Drummond & Co., of Norfolk, the brick to be delivered and stored at the expense and risk of the company; the price was \$16.20 per thousand.

LOWEST BIDS FOR STREET PAVING, 1908.

Square Yards	SURFACE MATERIAL		FOUNDATION		OTHER MATERIAL		Contract Price per Square Yard	EXCAVATION		
	Kind	Thick-ness	Kind	Thick-ness	Kind	Thick-ness		Quantity, Cubic Yards	Material	Price
25,103	Brick.....	4"	Broken stone.....	6"	MEXICO, MO. Sand.....	2"	1.40	11,000	Old telford	6,000 lump s'm
3,150	Asphalt.....	1½"	Concrete.....	4"	HARTFORD, CONN. Binder.....	1½"	1.65			*
3,460	Granite block.....	6"	Concrete.....	4"			2.73			
6,630	Brick.....		Concrete.....	4"	WHITE PLAINS, N. Y.		2.48			
3,220	Brick.....		Concrete.....	4"			2.20			
8,234	Macadam.....						.85			
5,100	Brick.....	4"	Concrete.....	4"	BLOOMINGTON, ILL.	2"	1.75	1,500		
5,073	Brick.....	4"	Concrete.....	4"	Sand.....	2"	1.85			
	Asphalt D.....		Broken stone.....		OMAHA, NEB.		1.30			
	Asphalt B.....						1.81			
	Asphalt Sh.....						2.50			
	Brick.....						2.12			
2,164	Asphalt block.....		Concrete.....	6"	WAUSEON, O.		1.72			
2,500	Brick.....	4"	Concrete.....		WESTFIELD, N. J.	2"	2.54			
22,000	Brick.....		Macadam.....		WAUKEGAN, ILL.		1.60	17,500		.40
21,780	Brick.....	2 courses	Cinders.....		CANEY, KAN.		1.305	11,100		.33
2,800	Brick.....	4"	Sand.....		COSHOCOTON, O.	2"	1.18	930	Sand.....	.30
7,722	Granite concrete.....	1½"	Concrete.....		FOND DU LAC, WIS.	5"	1.245	860		
	Brick.....				MARIETTA, O.		1.02			
16,000	Macadam.....	6"			WESTFIELD, N. J.		.52	2,000	Earth.....	.27
54,000	Brick.....		Concrete.....	5"	LEWISTON, IDA.		3.18			
	Crescoted block.....	3"-4"	Concrete.....	5"			2.27			
	Asphalt.....		Concrete.....	6"			2.40			
	Bitulithic.....		Concrete.....	6"			2.43			
26,000	Chert.....	1"-2"	Granite.....	3"-4"	ATLANTA, GA.		.45			

*\$6.35 per cubic yard for concrete.

†\$3.00 per cubic yard.

LOWEST BIDS FOR STREET PAVING, 1908--Continued

Square Yards	SURFACE MATERIAL		FOUNDATION		OTHER MATERIAL		Contract Price per Square Yard	EXCAVATION		
	Kind	Thick- ness	Kind	Thick- ness	Kind	Thick- ness		Quantity, Cubic Yards	Material	Price
22,805	Brick.....		Sand.....		PALATKA, FLA.		\$1.54	3,700		
					ENID, OKLA.					
20,000	Asphalt.....	3"	Concrete.....	6"			2.23			\$0.30
85,000	Asphalt.....	3"	Concrete.....	6"			2.29			.30
23,000	Brick.....	6"	Concrete.....	6"			2.35			.35
					GALVESTON, TEX.					
3,516	Brick.....		Sand.....	3"			1.50	Inc. in bid		
2,290	Brick.....		Concrete.....	6"			2.25			
					RICHMOND, IND.					
4,200	Macadam.....	12"					3.18	1,570 12,630	Rock.....	
									Earth.....	
					LEBANON, PA.					
10,800	Brick.....		Concrete.....	6"	Sand.....	2"	1.59	4,500		
5,577			Concrete.....	6"	Sand.....	2"	1.62	1,400		
					DOWNERS GROVE, ILL.					
2,775	Granite, Macadam.....	3"	Limestone.....	9"			1.25	1,273	Clay.....	.35
					WINONA, MINN.					
10,775	Brick.....	4"	Gravel.....	6"	Sand.....	2"	1.30			
12,295	Brick.....	4"	Gravel.....	6"	Sand.....	2"	1.29			
					MT. VERNON, ILL.					
10,167	Brick.....		Old macadam.....		Sand filler.....		1.10			
					WATERTOWN, N. Y.					
3,750	Medina Sandstone.....		Concrete.....	6"			3.79			
3,750	Brick.....		Concrete.....	6"			2.43			
					TRENTON, N. J.					
25,170	Macadam B.....						.67	14,425	Earth.....	.40
35,286	Macadam C.....						.76	17,600	Earth.....	.30
10,613	Macadam B.....						.75	2,400	Earth.....	.35
					ST. CHARLES, MO.					
9,332	Brick.....	4"	Concrete.....	6"	Sand.....	1"	1.58	3,152	Earth.....	.40
					CAIRO, ILL.					
14,000	Brick.....		Concrete.....	5"			2.05			.35
					CORTLAND, N. Y.					
7,050	Brick.....						2.04			
8,300							2.04			
5,300	Asphalt.....		Concrete.....	6"			2.25			
4,400	Asphalt.....		Concrete.....	6"			2.25			
					WATERTOWN, WIS.					
18,000	Brick.....		Concrete.....	5"	Sand.....	1½"	1.69	10,020	Earth.....	.27
					ELKHART, IND.					
20,463	Brick.....	4"	Concrete.....	4"			1.85	9,158	Gravel.....	
					WINCHESTER, IND.					
17,302	Brick.....		Concrete.....	5"			2.33	11,415		
					SCRANTON, PA.					
	Asphalt.....						2.45			
					MICHIGAN CITY, IND.					
10,400	Brick.....						1.485			
6,900	Brick.....						1.51			
4,200	Brick.....						1.51			
5,425	Brick.....						1.49			
					PALESTINE, TEX.					
	Granitoid.....						2.10			
	Brick.....		Concrete.....	5"			2.11			
					OIL CITY, PA.					
1,560	Brick.....		Gravel.....	8"	Tar filler.....		1.73			.50
3,510	Brick (Hillside).....		Gravel.....	8"	Tar filler.....		1.77			.50
5,760	Brick.....		Concrete.....	5"	Tar filler.....		1.79			.50
1,300	Brick (Hillside).....		Concrete.....	5"	Tar filler.....		183.0			.50
					NORTH BRADDOCK, PA.					
1,380	Brick.....		Stone and gravel.....	9"	Sand.....	2"	1.26	150		.29
980			Stone and gravel.....	9"	Sand.....	2"	1.26	90		.29
300			Stone and gravel.....	9"	Sand.....	2"	1.35	65		.40
					NEWBERN, N. C.					
14,000	Brick.....		Concrete.....	4"	Sand.....	2"	2.22			
					PLYMOUTH, MICH.					
10,277	Brick.....		Gravel, concrete.....		Cement filler.....	{ .08 .14 }	1.65			
10,277	Macadam.....				Tar filler.....		.90			
10,277	Concrete macadam.....						1.05			
					BALTIMORE, MD.					
12,911	Macadam.....	6" & 8"					99 & 1.30	6,600		.50
22,686	Macadam.....	6" & 8"					92 & 1.00	14,000		.50
13,067	Macadam.....	6" & 8"					90 & 1.20	6,800		.50
					LAWRENCE, KAN.					
4,000	Brick.....	4"	Concrete.....	4"	Sand filler.....		1.31	1,800		.35
2,000	Brick.....	4"	Sand, brick, 2 courses..	5½"	Sand filler.....		1.30	600		.35
					MARION, ILL.					
17,600	Brick.....	4"	Concrete.....	6"			1.62	5,690		.35
					HUNTSVILLE, ALA.					
20,000	Brick.....		Concrete.....	5"			2.00			

LOWEST BIDS FOR STREET PAVING, 1908—Continued.

Square Yards	SURFACE MATERIAL		FOUNDATION		OTHER MATERIAL		Contract Price per Square Yard	EXCAVATION		
	Kind	Thick- ness	Kind	Thick- ness	Kind	Thick- ness		Quantity, Cubic Yards	Material	Price
CALIFORNIA, PA.										
2,106	Brick.....						1.25	527		.29
3,195	Brick.....						1.29	1,176		.29
3,050	Brick.....						1.25	1,400		.29
4,160	Brick.....						1.25	2,170		.29
ANNAPOLIS, MD.										
22,686	Macadam.....	6"					.74	14,000		.49
22,686	Macadam.....	8"					.95			
ALBERT LEA, MINN.										
649	Brick.....	4"	Concrete.....	6"	Sand.....	2"	2.45	320	Clay.....	.25
LA CROSSE, WIS.										
5,924	Granite macadam.....	4"	Limestone.....	8"				1,875		
SALISBURY, MD.										
16,000	Bitulithic.....						2.39			
16,000	Brick.....				Cement filler.....		2.11			.15
					Pioneer filler.....		2.23			
					Sand.....		2.08			
GULFPORT, MISS.										
40,000	Brick.....		Concrete.....	6"			2.15			
5,000	Brick.....						1.57			
LA CROSSE, WIS.										
6,398	Granite macadam.....	4"	Limestone.....	8"			1.06	2,441	Sand.....	
JANESVILLE, WIS.										
2,973	Granite macadam.....	4"-3"	Limestone.....	6"-4"			1.05			
GREEN ISLAND, N. Y.										
1,070	Brick.....	4"	Concrete.....	6"			2.54	360		
CADIZ, O.										
10,427	Brick.....		Crushed stone.....	8"	Sand.....	2"	2.01			
JOHNSON CITY, TENN.										
13,000	Brick.....	4"	Concrete.....	6"			2.55			
TAYLORVILLE, ILL.										
14,341	Brick.....	4"	Concrete.....	6"			1.56			
ADAMS, MASS.										
6,900	Brick.....		Granite, concrete.....	6"			2.45			
BRADENTOWN, FLA.										
6,500	Brick.....				Sand.....		1.82	6,500		.15
20,000	Macadam.....	8"					.60	2,000		.15
14,000	Sand-clay.....	11"					.50	14,000		.15
DELAWARE, O.										
5,000	Asphalt block.....		Concrete.....	4"			2.10	1,624		.40
	Brick.....		Old macadam.....				1.28			
WELLSVILLE, N. Y.										
6,100	Brick.....	4"	Concrete.....	6"			1.80	1,800	Earth.....	.44
UNION, N. J.										
9,587	Macadam.....	4"					.575	4,825		.35
RACINE, WIS.										
17,203	Brick.....	4"	Concrete.....	5"			2.04			
OMAHA, NEB.										
4,151	Brick.....						2.10	243		.30
RHINELANDER, WIS.										
18,890	Macadam.....	4"					1.00	7,330	Sand.....	.35
LAWRENCE, MASS.										
28,000	Wood.....	4"	Concrete.....	6"			3.42			
AURORA, ILL.										
8,575	Brick.....						1.78			
1,345	Brick.....						1.80			
11,690	Brick.....						1.70			
12,224	Brick.....						1.80			
7,520	Brick.....						1.75			
AUBURN, N. Y.										
4,500	Asphalt.....						2.20			
3,800	Asphalt.....						2.20			
PORTSMOUTH O.										
1,934	Brick.....		Concrete.....	6"			1.19			
RED OAK, IA.										
4,010	Brick.....		Concrete.....	6"			1.88			.35
3,209	Brick.....		Concrete.....	6"			1.88			.35
NORTH MANCHESTER, O.										
	Asphalt.....		Concrete.....	5"			2.03			
MOBILE, ALA.										
34,712	Wood.....		Concrete.....	4"			2.285			
2,902	Brick.....		Concrete.....	4"			2.25			
CHARLESTON, S. C.										
30,000	Brick.....		Sand.....				1.375			
SHEBOYGAN, WIS.										
30,010	Granite macadam.....	3"	Limestone.....	9"			.96			
3,250	Brick.....		Concrete.....	6"			1.85			
10,680	Granite macadam.....	3"	Limestone.....	9"			1.015			
DAYTON, O.										
5,800	Brick.....		On bridge.....				1.60			

MUNICIPAL APPLIANCES

Parker Derricks

THE Parker Derrick No. 1 is a device which is designed to be of special service in handling water or sewer pipe or the removal of material from trenches or for any purpose where the weight to be lifted does not exceed 1,500 pounds. The derrick itself weighs only 500 pounds and the heaviest piece but 160 pounds, so it is possible for two men to erect it in fifteen minutes.

The derrick is very simple, consisting of only five parts, mast, boom, winch for operating boom, gear frame and post with frame. The mast and boom are made of selected Norway pine, ranging in length from 12 to 18 feet. The winch for operating the boom is needed only where a load of 1,000 pounds or more is to be set in place with care.

The gear frame or body of the derrick is made of gray cast iron. All shafts are made from cold rolled steel and rest in babbitted bearings. The post on the No. 1 derrick is made of three-inch extra heavy pipe. The gear frame and hollow post are the patented features, and the hollow post affords a passage for the rope to the bottom when it is desired to use other than hand power.

In erecting, the post, attached firmly to its base, is set in place and the gear frame slipped into place. The light mast with the four guy lines, blocks, hoisting and boom cables is then raised up and set in its socket in the gear frame. The boom is fastened to the gear frame with a steel pin.

Some of the advantages claimed for this derrick are that it will stand upright without guys when not loaded. When held in place with guys the boom can turn in a complete circle, and when held with stiff legs can turn three-fourths of a complete circle.

When it is desired to use other than hand power, the base is raised on blocks and shieve brackets are attached to the boom and to the bottom of the hollow column and the cable run through these. Either horsepower or mechanical winding drums can be used.

If loads heavier than 1,500 pounds are to be handled, the No. 4 derrick, which handles loads up to 4,000 pounds, can be used. This is somewhat heavier than the other and has sticks 6 x 6 instead of 4 x 6.



DERRICK FOR LIGHT WORK

These derricks have been used on all classes of ditch work, both by municipal departments and private contractors. The manufacturers have received letters which speak of the large saving effected by the use of their derricks. They are made by the Parker Hoist & Machine Company, whose main offices are at the Old Colony Building, Chicago. They also have offices in Minneapolis, Pittsburg, New Orleans, New York and San Francisco.

Trench Excavator

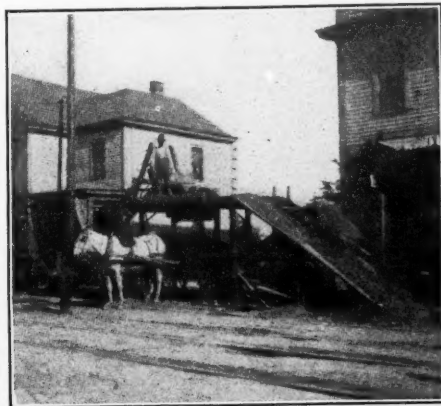
A RECENT invention patented by a practical man for practical uses is the excavating machine gotten out by William Heffron, of Cincinnati, O. The apparatus consists of a movable dumping platform and hoisting engine together with the necessary plows, scrapers and cables.

In operation a shieve block is fastened to a chain anchored to the two ends of a brace near the bottom of the trench. Through this shieve runs a cable, one end of which passes over guiding shieve wheels to the winding drum of the engine and acts as a drawback to the scraper. The other end is connected to the scraper and is continued to the engine to pull the apparatus forward.

The earth in the trench is first loosened, if necessary, by a plow attached to the cable. The plows are made in weights up to 700 pounds. In either case, whether or not it has been necessary to use a plow, a scraper is attached to the cable and the earth is pulled up the inclined plane to the automatic dump, where it drops into a cart or wagon beneath. The carts or wagons can either deposit the earth in the trench behind the completed sewer or take it to waste dump. In this way only the width of the street actually cut is made inaccessible and there are no piles of earth to interrupt traffic or present an unsightly spectacle.

During operation the dumping platform and engine rest on skids in a firm position. Work is continued until the full length of the cable is reached, then the whole apparatus can be moved the usual distance of 100 feet. The whole operation requires only about twenty minutes. If it is desired to move the apparatus from one job to another it is only necessary to hitch on a team of horses and draw it through the streets.

The manufacturers, the Heffron Trenching Machine Company, 810 Neave Building, Cincinnati, O., estimate that the capacity of the machine is 130 cubic yards per day of 10 hours, at depth of 20 feet and that the cost is as follows: Engineer, \$3; fire boy, \$1; four laborers, \$8; coal and oil, \$2.50. Total, \$14.50.



LOADING PLATFORM FOR TRENCH EXCAVATOR

TRADE NOTES

Cast-iron Pipe.—Chicago: General demand is light. Quotations: 4-inch, \$27; 6 to 12-inch, \$26; 16-inch and up, \$25. Birmingham: Market is considered as fairly active and outlook is good. Quotations: 4 to 6-inch, \$24; 8 to 12-inch, \$23; over 12-inch, average, \$22.

Pig Lead.—The market continues unusually dull, with the price of the smelting company below that of independent producers, shipment lead being offered in 50-ton lots at 4.30c. The independent producers are asking 4.37½c., New York, and 4.22½c., St. Louis.

Fire Escape.—Officers of the Wisconsin State Fire Marshal's Department witnessed a test of the modern fire escape at the Cardinal Hotel, Madison, Wis. The exhibition was given by M. J. Waller, of the Safety Fire Escape Company, of Britt, Iowa. The escape consists of a canvas, which is let down from the window sill of an upper story, being held in place by an iron bar, placed across the inside of the sill. It is formed in a loop by two triangular clamps, and at the receiving end it is held by two men. By gently sliding down the loop, sixty persons can make their escape in a minute, without the dangers which attend other fire escapes. The State officers went down, and were satisfied that it is a safer and handier escape than any now in use. When folded up, it occupies but a small space, and can be set up in a few seconds of time. The escape has been on the market since last July. The safety escape was designed and constructed especially for school buildings, where, in the event of a fire, pupils could be taken from the building more rapidly and with less danger than with the ordinary ladder or stair escapes. Other advantages over the iron escapes is that it is cheaper and does not disfigure the building, being in evidence only when in use. The cost is about 80 cents a foot. It requires 20 feet for the second story.

New Trolley Cars.—Two trolley cars of a type which it is claimed will go a long way toward solving the problem of the Pennsylvania State Railway Commission in preventing the crowding of the motorman, are being given their finishing touches at the Barber Car Works, York, Pa. Designed principally to obviate double trucks, the crowding of the motorman is made impossible by a booth on the right side of the car, within which he stands alone. One of the Barber cars was on exhibition during the car builders' convention at Atlantic City in October, and since that time the company has been receiving inquiries as to the cost of the cars and for other particulars. The two cars, which are nearing completion, are for the line at Sunbury, which already has several in operation and which are giving satisfaction.

Northwestern Cement Products Association.—The fifth annual convention of the Northwestern Cement Products Association will be held on March 2-4, in the Armory, Minneapolis, Minn. It occupies a ground space of 40,000 square feet, exceptionally well heated and illuminated. It is located within one block of Hennepin Avenue and is easily reached by street car from any of the downtown hotels. Anyone wishing information regarding the coming convention should address either Martin T. Roche, president, St. Paul, or J. C. Van Doorn, secretary, Minneapolis.

Large Gas Plant.—On the return from Europe of Col. I. C. Cobley, president of the Western United Gas Company, who is expected in Joliet, Ill., shortly, work will begin on the new million dollar gas plant near Joliet. When the new plant is completed the units in Elgin, Aurora and Joliet will be abandoned and the gas for the entire district will be created in the gigantic plant. The company already owns a tract of land lying west of the sanitary canal, opposite the power plant owned by the district.

Fire Brick.—The Harbison-Walker Refractories Company, Pittsburg, Pa., has just issued an illustrated pamphlet under the title "What Are Your Lime Kiln Costs?" The object of the book is to call attention to the item of fire brick as an element in the cost of manufacturing lime and to show that that cost is reduced by the use of the most refractory brick even at a higher cost. The same line of argument applies, of course, to any line of manufacture in which very high temperatures are used. The illustrations in the book are sketches, not photographs, such as are ordinarily used.

Paving Bricks.—The Petersburg Fire Brick and Tile Company, Coal Grove, Ohio, has a contract for furnishing 1,000,000 paving brick for paving Pike street, Coal Grove. This company has a large modern plant, where it produces fire brick and tile, blast-furnace crucibles, boshes and inwalls, steel-furnace shapes, rolling-mill brick and tile, canister for steel plants, coke-oven brick.

Culverts.—The problem of culvert building involves two items chiefly—lasting quality and low cost. In any new country, where timber is plentiful, of course, little lumber bridges serve where the gullies are too deep for ordinary hauling, but wherever scientific road making is practiced the easiest gradients covering the longest stretches possible are laid out by the engineers. So many culverts are required, and culvert building has become an important question with all road authorities. The almost limitless utility of concrete construction makes it easy to understand the popularity of the collapsible culvert form which is offered for sale by the Miracle Pressed Stone Company, 123 Wilder street, Minneapolis, Minn. As the name implies, it is a set of galvanized iron forms—two 6 or 10-foot lengths making one set, that are laid in the ditch and the Portland cement concrete is tamped about it. In a few hours the cement has set and the culvert forms are removed. These culvert forms are designed in sizes from 1 to 4 feet in diameter, capable of meeting any ordinary requirement. As the concrete is in one solid piece from end to end, its strength and permanence is assured.

Permanent Roads.—Under the title of "The Permanent Roadway" the National Paving Brick Manufacturers' Association publish an illustrated pamphlet describing what has been done in the way of improving county highways with brick roadways. The method usually employed, which the association recommends, is a roadway nine feet wide with gravel foundation, a concrete stone or vitrified clay curb, with a parallel 8 to 10-foot dirt roadway. This construction, it is claimed, meets the demands of traffic better than a macadam road, even when the latter is treated with tar or asphaltic oil. A partial list of brick-paved county roadways in Cuyahoga County, Ohio, is given which foots up to 87 miles.

PERSONALS

BARRY HENRY MILTON, Providence, R. I., has been appointed executive secretary by Mayor-elect Henry Fletcher.

BEARDSLEY, J. W., Manila, P. I., director of the Board of Public Works of the Philippine Islands, has resigned to assume charge of the Government's irrigation projects in the islands. He will be succeeded by Mr. J. F. Case, Chief Engineer of the Department of Sewer and Water Works Construction, of Manila.

BRENNAN, WILLIAM, Brooklyn, N. Y., formerly Deputy Sewer Commissioner, also Deputy Tenement House Commissioner, died November 23.

FERN, JOS. J., has been elected Mayor of Honolulu, Hawaiian Islands.

FLETCHER, HENRY, Providence, R. I., was elected Mayor, defeating Mayor P. J. McCarthy for re-election.

GOODHUE, LEVI K., Chief of Fire Department, Beverly, Mass., for thirty-four years, died November 22.

GREGORY, JOHN H., Columbus, O., who has served as a consulting engineer on the sewage disposal plant, will complete his work by the first of the year and the position will be abolished.

HAMILTON, W. S., Alderman, Jackson, Miss., has been chosen to fill the unexpired term caused by the death of Mayor Ramsey Wharton.

HERBST, H. H., Allentown, Pa., has been appointed Mayor to fill the vacancy caused by the death of Mayor Harry G. Stiles.

JOHNSTON, PROF. J. L., of Mississippi College was elected Mayor of Clinton, Miss., over R. R. Hardy, a student under him. The contest was decided by the narrow margin of nine votes, while every vote but one of the town's registration was polled.

LARIMER, W. H. H., Kansas City, was the special guest of honor at the fiftieth anniversary of Denver, Col. He was Denver's first Treasurer.

LINDSEY, H. R., Paducah, Ky., president of the Board of Councilmen, has resigned.

MCLINTOCK, WILLIAM E., Chelsea, Mass., Chairman of the Chelsea Board of Control, has been offered and declined a position on the New York State Highway Commission.

MORGAN, GEO. C., consulting engineer, of Chicago, has been employed by the city of Terre Haute, Ind., to investigate the local water works.

PALMER, N. F., New York, N. Y., has been appointed special engineer by the Board of Estimate and Apportionment of the City of New York to make surveys and maps for the proposed extension of Eastern Parkway, Brooklyn, through Cypress Hills Cemetery and from Highland Park to Forest Park.

REYBURN, JOHN E., Mayor of Philadelphia, recently spoke on the "Business Side of a Great City" before the Walnut Street Business Men's Association.

REUTERDAHL, A., Spokane, Wash., has resigned as reinforced concrete designer in the office of the City Engineer.

SANDBLAD, S. G., McKeesport, Pa., has been appointed City Chemist.

SHAW, GEO. C., Richmond, Va., Chief of the Fire Department, died from suffocation at a fire on November 20.

WILSON, RICHARD H., Metuchen, N. J., has been elected Mayor. There is a question as to whether his term of office should begin at once. A. L. Ellis was elected Mayor by Council to fill the term of Jesse T. Jackson, Mayor-elect, who died before taking office. The period for which Jackson was elected to fill has not yet expired.

PROPOSALS

CONSTRUCTING AND LEASING WATER WORKS

Connersville, Ind.

Notice is hereby given that the city of Connersville, Indiana, will, on the 12th day of January, 1909, at 7:30 o'clock P.M., receive proposals for the construction and leasing to said city of certain improvements and additions to the city water works and water supply of said city according to specifications on file in the City Engineer's office.

All proposals to be in the form of an offer to purchase real estate on which to construct pipe lines, pumping station and other things and to lease all of such property to the city for a term of years, not less than ten (10), nor more than twenty-five (25), at an annual rental to be specified in proposal and providing for the right of said city to purchase said property and water supply at the end of term of years for a fixed price to be therein specified.

Such proposal shall be accompanied by plans and specifications, showing style of structure and machinery to be erected and specified, together with the contract or lease. The lessor to guarantee the maintenance of the source and supply of water.

Proposal to be accompanied by good bond payable to said city in the penal sum of one hundred thousand (\$100,000) dollars, conditioned that said lessor will complete said additions in accordance with terms of specifications and guarantee the maintenance of said source of water supply during term of lease.

The city reserves the right to hold any or all proposals open to acceptance until one is accepted according to the method prescribed by law.

JACOB S. CLOUDS,
City Clerk.

(22-23)

GAS AND ELECTRIC LIGHT PLANT

Chillicothe, Mo.

Proposals wanted for the construction of a gas and electric light plant for street and private lighting, with day current, in Chillicothe, Missouri, a city of eight thousand, fifteen-year franchise.

All communications should be addressed to City Clerk.

H. I. SPENCE, City Clerk,
Chillicothe, Mo.

DEEP WELL DRILLING

Herrin, Ill.

Sealed proposals will be received at the office of the City Engineer of the City of Herrin, Ill., for drilling and casing a deep well for said city, until December 15, 1908. Each proposal must be made upon blank forms furnished by the City Engineer and must be accompanied by a certified check for \$100 drawn in favor of the City of Herrin, Ill., without conditions, as liquidated damages that the successful bidder will enter into contract within ten (10) days. Specifications can be seen at the office of City Engineer.

The City Board reserves the right to reject any and all bids. Proposals open at 2 o'clock P.M., December 16, 1908.

Specifications will be furnished by writing City Engineer or City Clerk.

WATER WORKS

Murdo, S. Dak.

Bids for installing a system of water works in Murdo, Lyman County, S. Dak., will be opened December 6. For plans and specifications, write to

DAKOTA ENGINEERING CO.,
Mitchell, S. Dak.,
or
CITY AUDITOR,
Murdo, S. Dak.

BASCULE BRIDGE

Green Bay, Wis., Nov. 14, 1908.

Sealed proposals will be received at the office of the City Clerk, Green Bay, Wis., until 2 o'clock P.M. of Monday, December 14, 1908, for the construction of a bridge over Fox River at Walnut street. Four one hundred forty feet fixed spans, one movable span (bascule), one hundred fourteen feet. Plans on file with Engineering News, 220 Broadway, New York; Strauss Reinforced Concrete and Bascule Bridge Co., 903 Fort Dearborn Building, Chicago; City Clerk's Office, Green Bay.

For specifications, bidding blanks, etc., apply to W. W. Reed, City Engineer, Green Bay, Wis.

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SEWAGE DISPOSAL WORKS

By HUGH P. RAIKES

Assoc. M. Am. S. C. E., Assoc. M. I. C. E.

CONTENTS

Alternative Methods of Treatment and Preliminary Considerations Affecting the Design and Construction of Works. Diffusion in Tidal Waters. Irrigation and Land Filtration. Removal of Matters in Suspension by Screening and Treatment in Tanks. Chemical Precipitants and the Disposal of Sewage Sludge. Filtering Media for Bacteria Beds. Contact Beds and Their Operation. Percolating Filters. Alternative Methods of Construction and Working. Distribution over Percolating Filters. The Separation and Disposal of Storm Water. Purification of Trade Wastes. Maintenance and Management of Sewage Disposal Works. Index.

IN view of the fact that many millions of dollars are spent annually on Sewage Disposal Works, it is obviously a matter of the greatest importance, in the interests both of economy and of public health, that those who are entrusted with the design and construction of such works, or with the expenditure of public money upon them, should not only clearly understand the essential principles involved, but should also have at their disposal the latest results of contemporary experience to guide them in the practical applications of those principles.

Although the chemical and biological aspects of Sewage Disposal have been very fully dealt with by a number of writers, there is no up-to-date book from which equally full and reliable information can be obtained regarding the more practical side of the question, considered from the point of view of the engineer.

In attempting to make good this deficiency, the author of the present book has presented an impartial review of the modern methods of sewage purification, on the practical application of which he has been engaged for the past fifteen years. We can, without hesitation, highly recommend this book to all engineers interested in this important and timely subject.

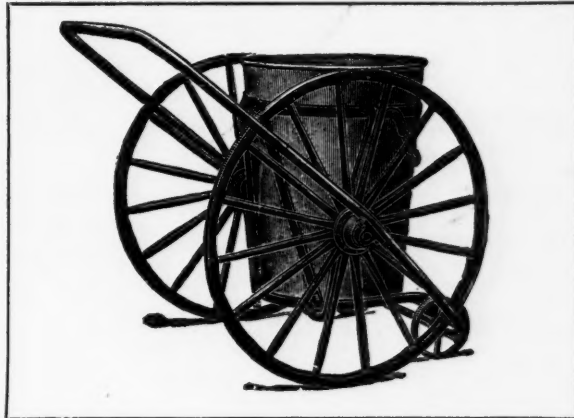
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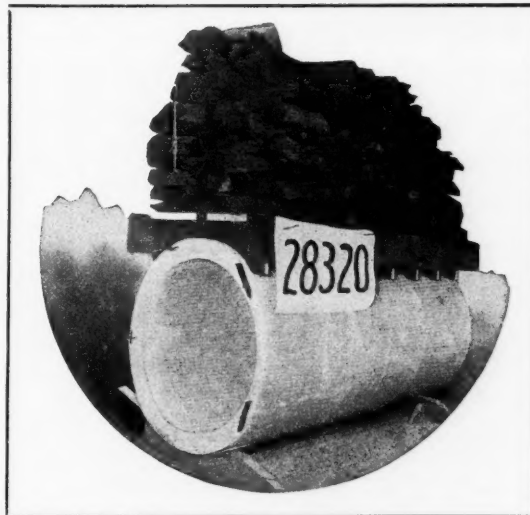
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Pittsburg: Machesney Bldg. Savannah: National Bank Bldg.



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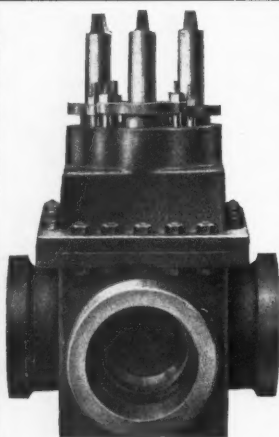
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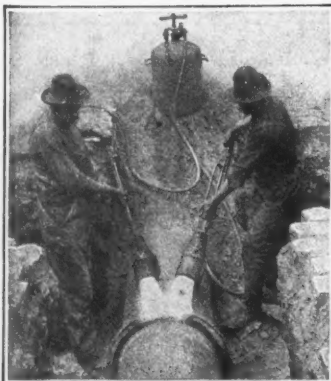


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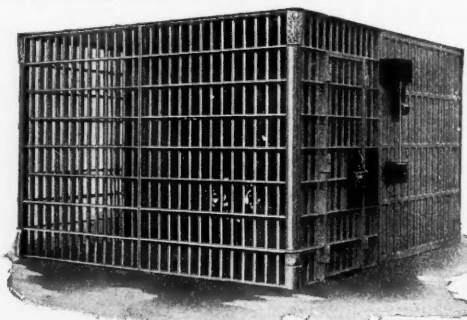
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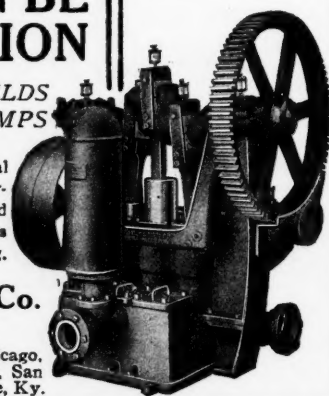
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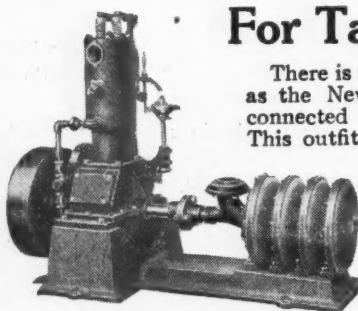
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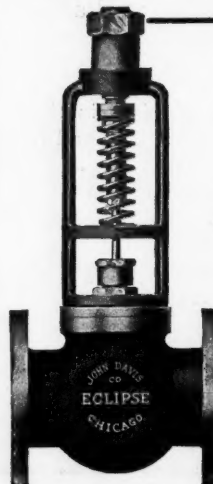
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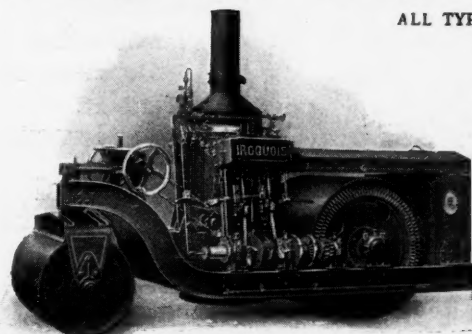


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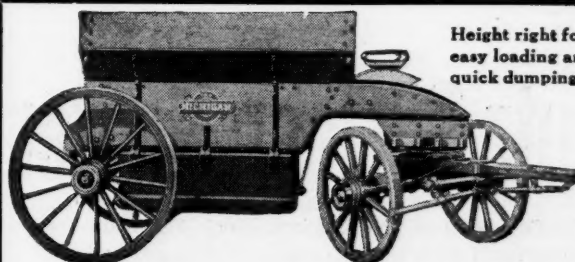
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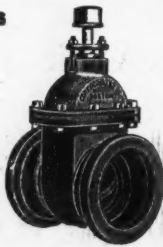


Fig. 210
6" Standard
Gate Valve



Fig. 47
12" Coffin Flap Valve

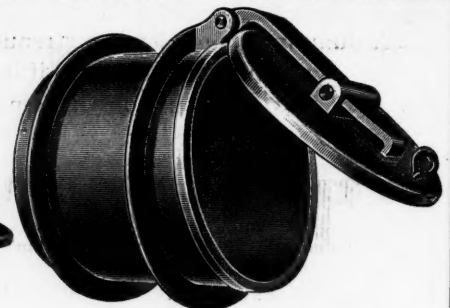


Fig. 41
30" Coffin Flap Valve
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